

# NEBOSH Certificate

## Unit IGC1

### Management of International Health and Safety



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RRC Module No: IGC1.3

Spring 2014 edition

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# NEBOSH INTERNATIONAL GENERAL CERTIFICATE

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UNIT IGC1: MANAGEMENT OF INTERNATIONAL  
HEALTH AND SAFETY

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## ACKNOWLEDGMENTS

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## REVISION AND EXAMINATION GUIDE

## SUGGESTED ANSWERS



# Introduction

## COURSE STRUCTURE

This textbook has been designed to provide the reader with the core knowledge needed to successfully complete the NEBOSH International General Certificate in Occupational Health and Safety, as well as providing a useful overview of health and safety management. It follows the structure and content of the NEBOSH syllabus.

The NEBOSH International General Certificate consists of three units of study. When you successfully complete any of the units you will receive a Unit Certificate but to achieve a complete NEBOSH International Certificate qualification you need to pass the three units within a five-year period. For more detailed information about how the syllabus is structured, visit the NEBOSH website ([www.nebosh.org.uk](http://www.nebosh.org.uk)).



### Unit IGC1: Management of International Health and Safety

Element 1	Foundations in Health and Safety
Element 2	Health and Safety Management Systems 1 - Policy
Element 3	Health and Safety Management Systems 2 - Organising
Element 4	Health and Safety Management Systems 3 - Planning
Element 5	Health and Safety Management Systems 4 - Measuring, Audit and Review

### Unit GC2: Controlling Workplace Hazards

Element 1	Workplace Hazards and Risk Control
Element 2	Transport Hazards and Risk Control
Element 3	Musculoskeletal Hazards and Risk Control
Element 4	Work Equipment Hazards and Risk Control
Element 5	Electrical Safety
Element 6	Fire Safety
Element 7	Chemical and Biological Hazards and Risk Control
Element 8	Physical and Psychological Hazards and Risk Control
	Revision and Examination Preparation

### Unit GC3: Health and Safety Practical Application

Aim of the Practical Assessment
Workplace Inspection
Report to Management

## Assessment

To complete the qualification, you need to pass two formal written exams (one for Unit IGC1 and one for Unit GC2), as well as a safety inspection of your workplace, including a short report to management (Unit GC3).

Each written exam is two hours long and consists of one long question (20% of the marks) and ten short questions (each being 8% of the total marks). You must answer all questions.

To help you prepare, this textbook contains Exam Skills activities at the end of each element of your course.

Guidance on how to answer an exam-style question is provided, and suggested answers are provided in a section at the end for you to compare them with your own.

We have also included some guidance on how to go about completing the safety inspection of your workplace so you will be fully prepared for that, too.

## More Information

As you work your way through this book, always remember to relate your own experiences in the workplace to the topics you study. An appreciation of the practical application and significance of health and safety will help you understand the topics.

## Keeping Yourself Up to Date

The field of health and safety is constantly evolving and, as such, it will be necessary for you to keep up to date with changing legislation and best practice.

RRC International publishes updates to all its course materials via a quarterly e-newsletter (issued in February, May, August and September), which alerts students to key changes in legislation, best practice and other information pertinent to current courses,

Please visit <http://www.rrc.co.uk/news/newsletters.aspx> to access these updates.

## Other Textbooks Available in this Series

- The Management of International Oil and Gas Health and Safety: A Guide to the NEBOSH International Technical Certificate in Oil and Gas Operational Safety (First Edition, June 2012)
- NEBOSH Award in Health and Safety at Work – ARABIC (First Edition, June 2012)

RRC International is continually adding to its range of textbooks. Visit [www.rrc.co.uk/publishing](http://www.rrc.co.uk/publishing) for a full range of current titles.

# User Guide

Before you start to use this textbook, take a moment to read this User Guide.

At the start of each element you will find a Contents table and a list of Learning Outcomes. These are important because they give you an idea of the different topics you will be studying and what you are aiming to achieve.

## KEY INFORMATION

Each main section of material starts with a Key Information box. This box presents an overview of the important facts, ideas and principles dealt with under the section heading. There is no depth or detail here, just the basics.

After the Key Information box comes the main content. The main content has been designed to explain and describe the topics specified in the relevant section of the syllabus to the expected level. Examples have been given to illustrate various ideas and principles in a variety of different workplaces.

## TOPIC FOCUS

Topic Focus boxes provide depth and detail by concentrating on a very specific topic area.

## GLOSSARY

Glossary boxes contain descriptions or definitions of words or phrases that are included in the main content.

## HINTS AND TIPS

Hints and Tips boxes contain simple ideas that can help you as you work through the materials and prepare for the end-of-course exam.

## MORE...

More... boxes contain sources of further information. (Websites are current at the time of writing.) Although this book includes everything you need, it is worth looking at these additional sources if you can. This will give you a broader and deeper understanding.

## EXAM SKILLS

After each element you will find a short Exam Skills section containing an exam-style question (or two) for you to practise answering. Guidance on how to answer is provided, together with a Suggested Answer for you to compare with your own.



## REVISION QUESTIONS

At the end of each section you will find Revision Questions. These are not past exam questions, but should be useful for self-assessment. You can mark your answers against the Suggested Answers provided.

## Summary

Each element finishes with a Summary. This presents a very concise reflection of the key ideas and principles contained in the element. When you have finished studying an element you might use the summary to test your recall of the detailed information contained within the element.

When you have studied all of the elements in a unit you should move on to look at the Revision and Examination Guide.



# FOUNDATIONS IN HEALTH AND SAFETY

ELEMENT

1



## LEARNING OUTCOMES

On completion of this element, you should be able to demonstrate understanding of the content by applying what you have learnt to familiar and unfamiliar situations. In particular you should be able to:

- ❶ Outline the scope and nature of occupational health and safety.  
.....
- ❷ Explain the moral, social and economic reasons for maintaining and promoting good standards of health and safety in the workplace.  
.....
- ❸ Explain the role of national governments and international bodies in formulating a framework for the regulation of health and safety.

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# The Scope and Nature of Occupational Health and Safety

## KEY INFORMATION

- The study of health and safety involves the study of many different subjects including the sciences (chemistry, physics and biology), engineering, psychology, sociology and the law.
- There are many barriers to good standards of health and safety in a workplace: workplaces can be complex; there are often competing and conflicting demands placed upon people and organisations; and good health and safety practice often relies on the perfect behaviour of individuals, who sometimes do not behave in an ideal way.
- Key definitions are:
  - **Health** - the absence of disease.
  - **Safety** - the absence of risk of serious personal injury.
  - **Welfare** - access to basic facilities.
  - **Accident** - an unplanned, unwanted event that leads to injury, damage or loss.
  - **Near miss** - an unplanned, unwanted event that had the potential to lead to injury, damage or loss (but did not actually do so).
  - **Dangerous occurrence** - a specified event that may have to be reported to the relevant authority by law.
  - **Hazard** - something with the potential to cause harm.
  - **Risk** - the likelihood that a hazard will cause harm, in combination with the severity of injury, damage or loss that might occur.

## THE MULTI-DISCIPLINARY NATURE OF HEALTH AND SAFETY

Workplace health and safety practice brings together knowledge from many different disciplines. Some health and safety topics are simple to understand; others are technical and require specialist knowledge. Sometimes the practical solution to a health and safety problem is straightforward; at other times the solution is complicated and demanding and requires the correct application of technical knowledge and thinking.

In order to fully understand a health and safety issue you need to be familiar with the:

- Technical background to the issue and have the relevant knowledge.
- Standards that may apply to the workplace and to the specific health and safety issue under consideration.
- Possible strengths and weaknesses of the various options available to solve the problem.

The study of health and safety therefore involves many different subjects, including the sciences (chemistry, physics and biology), engineering, psychology, sociology and the law.

## BARRIERS TO GOOD STANDARDS OF HEALTH AND SAFETY

There are many barriers to good standards of health and safety in a workplace:

- **Complexity** - workplaces can be complicated areas, involving the co-ordination of many people performing many different activities. Finding a solution to a specific health and safety problem or issue can be complex, requiring extensive background knowledge and an awareness of the possible consequences of the various courses of action that are available.
- **Conflicting demands** - there are often competing and conflicting demands placed upon people and organisations. A common conflict of interest is that between the need to supply a product or a service at an appropriate speed so as to make a profit, and the need to do so safely and without risk to people's health. Another conflict can be created by the need to comply with different types of standards at the same time, e.g. health and safety law as well as environmental protection law.



# The Scope and Nature of Occupational Health and Safety

- **Behavioural issues** - good health and safety practice often relies on the perfect behaviour of individuals, and people sometimes do not behave in this ideal way. The solution to a health and safety problem usually requires a worker to carry out their job in a particular way. For example, a worker on a construction site should wear a hard hat to protect themselves from falling objects. But people are not robots; they do not behave as they are supposed to all the time. Workers sometimes make mistakes (they do the wrong thing thinking that it is the right thing to do). Sometimes they deliberately do the wrong thing, knowing that it is wrong, but doing it anyway. The fact that health and safety standards are affected by worker behaviour can be a significant barrier to maintaining good standards in a workplace.



Behavioural issues - a worker ignores safety precautions

## DEFINITIONS

The topic of health and safety makes use of key words and phrases. Some important definitions are:

### Health

The absence of disease or ill-health. For example, asbestos creates a health risk because if you inhale asbestos dust you may contract lung cancer (a disease) at some stage later in life (perhaps 10 or 20 years after you inhaled the dust). Health relates not only to physical ill-health but also to psychological ill-health (e.g. exposure to extreme stress can lead to nervous breakdown).

### Safety

The absence of risk of serious personal injury. For example, walking under a load suspended from a crane during a lifting operation is not safe because if the load falls serious personal injury or death could result. Staying out of the danger area results in safety.

### Welfare

Access to basic facilities such as toilet facilities, handwash stations, changing rooms, rest rooms and places where food can be prepared and eaten in relatively hygienic conditions, and drinking water and basic first-aid provision.



Welfare facilities - hand-wash stations

## REVISION QUESTION

1. Why might the managers of an organisation not consider health and safety to be a priority?  
(Suggested Answers are at the end.)

# Reasons for Maintaining and Promoting Good Standards of Health and Safety

## KEY INFORMATION

- The three main reasons why an organisation has to manage health and safety are: moral, social (or legal) and economic.
- The moral reason relates to the moral duty that one person has to another. Many people are killed, injured or made sick by their work. This is morally unacceptable, and society as a whole demands that people are safe while at work.
- The social (or legal) reason relates to the framework of laws that govern the conduct of businesses and organisations. An employer has a duty to provide a safe place of work, safe plant and equipment, safe systems of work, adequate training and supervision, and competent employees.
- The economic reason relates to the fact that accidents and ill-health cost money. When an accident occurs there will be direct and indirect costs as a result of that event. Some of these losses can be insured against; many of them will be uninsured.

Organisations and individuals have to manage health and safety standards within the workplace for various reasons. These reasons can usually be grouped under three main headings: moral, social (or legal) and economic.

## THE SIZE OF THE PROBLEM

The following global statistics have been published by the International Labour Organisation (ILO) as part of its SafeWork programme (you do not need to remember the actual figures; we give them to highlight the scale of the problem):

- There are 270 million occupational accidents and 160 million occupational diseases recorded each year.
- Around 2 million people die every year from occupational accidents and occupational diseases.
- 4% of the world's gross domestic product is lost each year through the cost of injury, death, absence, etc.
- There are around 355,000 work-related fatal accidents each year - half of these occur in agriculture.

Other high-risk sectors are the construction and fishing industries. These figures relate to the number of accidents and cases of disease that are reported and recorded globally. Not everything is reported or recorded, however, so the real figures are almost certainly higher.

## MORAL EXPECTATIONS OF GOOD STANDARDS OF HEALTH AND SAFETY

The statistics above indicate that a huge amount of pain and suffering is experienced by people who simply go to work to earn a living. The numbers indicate the scale of the problem. What the numbers don't do is tell the individual stories. When health and safety is not managed properly people get killed and injured in gruesome ways, or suffer terrible diseases that have a massive impact not only on them, but also their dependants, families, friends and colleagues. Society as a whole considers these events to be morally unacceptable, and injury or ill-health should not be a price that has to be paid in order for the worker to feed their family.

Employers (through management) provide the premises and equipment and put in place the working practices that employees use to produce the goods and services from which employers earn profits. To that extent employers can be said to gain from the conditions in the workplace. In return, they provide an income for employees, but also have a moral responsibility to provide safe and healthy working conditions.

# Reasons for Maintaining and Promoting Good Standards of Health and Safety

## SOCIAL EXPECTATIONS

The social (or legal) reasons for managing health and safety relate to the framework of international and national laws that govern the conduct of businesses and organisations. Most countries have laws that set standards for how organisations should conduct themselves with regard to health and safety. Failure to achieve these legal minimum standards can lead to enforcement action by the authorities, or prosecution before the courts. Successful prosecution can lead to a fine and, in many countries, to imprisonment for the individuals concerned.

Most countries have these legal standards in place in order to meet the expectations of their society. These expectations are translated into the laws that govern the conduct of individuals and organisations. The expectations of society tend to increase over time so the standards of behaviour of organisations have to meet these higher expectations. In this way basic health and safety laws are amended over time to become more stringent.

The legal responsibility for health and safety at work rests primarily on the employer. The employer has a duty to provide the following:

- **Safe Place of Work**

The employer creates the place of work, which should be reasonably safe and without risk to health. What is considered “reasonable” may vary with the type of work. The employer should also provide safe access to and from the workplace.

- **Safe Plant and Equipment**

All the machinery, tools, plant and equipment used by employees at work should be reasonably safe and without health risk. Exactly what this means will depend on the type of work being carried out. The greater the risk involved, the greater the care that must be taken. For example, machinery would need to be inspected; serviced; repaired and replaced in a steel-making factory, whereas in an office a very simple inspection regime might be sufficient.



A worker inspects equipment to ensure that it is safe

- **Safe Systems of Work**

There should be recognised procedures for the safe conduct of all work activities. These procedures should cover all foreseeable possibilities, e.g. the operation of drilling equipment in different types of weather, rather than just a set of rules that ensure safety when the weather is good. Procedures should cover the routine day-to-day activities of the organisation and the non-routine, occasional or one-off activities, as well as any foreseeable emergencies that might arise.

- **Training, Supervision and Competency of Staff**

Workers must be able to carry out the necessary procedures. Employers have a duty to provide appropriate training so that workers are aware of the hazards and risks inherent in their work, the safe systems of work and the emergency procedures. This training can be reinforced by providing information and instruction.

Employers should supervise workers to ensure that they are carrying out their work with minimal risk to themselves and others. This does not mean that supervisors have to stand and watch every worker at all times; they just have to provide adequate levels of supervision. Finally, an employer should ensure that all workers, supervisors and managers are competent.



A worker receives on-the-job training

## GLOSSARY

### COMPETENT

In this context ‘competent’ means that each person has sufficient training, knowledge, experience and other abilities or skills to be able to carry out their work safely and without risk to health.

## THE BUSINESS CASE FOR HEALTH AND SAFETY

The business case for health and safety is simply that accidents and ill-health cost money. When an accident occurs there will be direct and indirect costs associated with that event. Some of these losses can be insured against, but many cannot. Accidents and ill-health can significantly affect the profitability of an organisation and, in some cases, can put an organisation out of business.

### Direct and Indirect Costs

When an accident occurs there are two types of losses that the organisation may face:

- **Direct costs** - the measurable costs arising directly from the accident.
- **Indirect costs** - those which arise indirectly as a consequence of the event. Indirect costs are often difficult to quantify precisely and may be hard to identify.

## TOPIC FOCUS

Examples of direct costs:

- Fines in the criminal courts.
- Compensation payable to the victim, which is likely to be met by insurance cover and will therefore result in an increase in insurance premiums.
- First-aid treatment.
- Worker sick pay.
- Repairs to, or replacement of, damaged equipment and buildings.
- Lost or damaged product.
- Lost production time while dealing with the injury.
- Overtime to make up for lost time.
- Costs associated with the rehabilitation of the injured worker and their return to work.

Examples of indirect costs:

- Loss of staff from productive duties in order to investigate the incident, prepare reports, undertake hospital visits, deal with relatives, attend court proceedings.
- Loss of staff morale (which impacts on productivity, quality and efficiency).
- Cost of remedial action following an investigation, e.g. change of process or materials and/or the introduction of further control measures.
- Compliance with any enforcement notice served.
- Cost of recruiting and training temporary or replacement labour.
- General difficulties in recruiting and retaining staff as an indirect result of the accident.
- Loss of goodwill of customers following delays in production and fulfilling orders.
- Activation of penalty clauses for failing to meet delivery dates.
- Damage to public image and business reputation.
- Damage to industrial relations, perhaps leading to industrial action (e.g. strikes).



# Reasons for Maintaining and Promoting Good Standards of Health and Safety

From the examples given you can see that, although they are more difficult to identify, the indirect costs associated with a workplace accident can be very large indeed.

## INSURED AND UNINSURED COSTS/ EMPLOYERS' LIABILITY INSURANCE

It is usually possible to take out insurance to cover some of the losses that might foreseeably be experienced by an organisation. In most countries it is compulsory to take out employers' liability insurance so that if a worker is killed or injured at work there is insurance in place to pay that worker (or their dependants) compensation and to meet the employer's civil costs. As well as meeting a legal requirement, this insurance may provide some comfort to workers, knowing that in the event of an injury the employer is insured to compensate them financially. Similarly, it is usual for an employer to insure their premises and stock against fire.

However, it is not possible to insure against all losses. Some losses are uninsurable by their very nature. For example, you cannot take out an insurance policy to pay money should you be prosecuted and fined in the criminal law courts. Other losses cannot be insured against because the loss is too difficult to quantify, or because the insurance would be too expensive to consider. For example, organisations cannot insure themselves against loss of revenue if their business reputation is damaged as a result of a major workplace accident. There is no law that prevents this type of insurance, but it is simply not offered by insurance providers.

Many of the direct and indirect costs associated with workplace accidents are uninsured for these reasons. It has been estimated that uninsured losses are between 8 and 36 times greater than insured losses.

Examples of possible insured and uninsured losses include:

Insured Costs	Uninsured Costs
Damage to plant, buildings and equipment	Production delays or down time
Compensation paid to workers	Loss of raw materials due to accidents
Medical costs	Accident investigation time
Legal costs (civil claims)	Criminal fines and legal costs
	Sick pay for injured workers
	Overtime to make up for lost production
	Hiring and training new employees
	Loss of business reputation

## GLOSSARY

### CIVIL LAW

The branch of law concerned with compensating individuals for the wrongs done to them.

## REVISION QUESTIONS

2. In three words sum up the reasons why an organisation should manage health and safety.
3. Give three insured costs and three uninsured costs that might arise from a workplace accident. (Suggested Answers are at the end.)

# Role of National Governments and International Bodies

## KEY INFORMATION

- The International Labour Organisation (ILO) has set out Convention C155 and Recommendation R164, which apply to workplace health and safety standards.
- Most countries and regions have established legal standards that meet or exceed the minimum standards set out in C155 and R164.
- These legal standards place a duty on the employer to ensure that workplaces, work activities and work equipment and substances are, so far as is reasonably practicable, safe and without risk to health.
- The legal standards also place a duty on workers to look after their own and other people's health and safety.
- Failure to comply with these legal standards may lead to enforcement action by the authorities, or prosecution through a country's criminal courts. Successful prosecution usually results in a fine, but may result in imprisonment.
- Work-related injuries may result in compensation being paid to the victim. In some countries this is achieved by legal action through the civil courts, while other countries may have worker compensation schemes for this purpose.

## THE INTERNATIONAL FRAMEWORK

There are no truly global legal standards governing workplace health and safety. Most countries have their own laws, developed over the years to tackle their own issues and concerns. However, countries often end up adopting similar basic approaches to protect the health and safety of their people; the detail may vary but the underlying principles are the same.

A prime mover in the area of international standards in health and safety is the International Labour Organisation (ILO), which is an agency of the United Nations (UN). Most countries are members of the ILO. The two primary outputs of the ILO are "Conventions" and "Recommendations". These set international standards.

Conventions and Recommendations can form the basis of detailed legislation in each member country - the result being that basic minimum health and safety standards are adopted. The detailed provisions will still vary, as each member state implements the standards in a nationally appropriate way.

In 1981, the ILO adopted the **Occupational Safety and Health Convention (C155)**. This describes a basic policy for health and safety at both the national level and the level of the individual organisation.

The **Occupational Safety and Health Recommendation 1981 (R164)** supplements C155 and provides more detailed guidance on how to comply with the policies of C155. In particular, it identifies obligations that might be placed on employers and employees in order to achieve the basic goal of a safe and healthy place of work.

Countries that belong to the ILO have ratified C155 and R164 and have then legislated to put their requirements into their own national (or regional) law.

In C155 and R164 there is a general recognition that most of the responsibility for ensuring good standards of health and safety at work lies with the employer - since he or she provides the work, the workplace, the tools, systems, methods, etc. They also recognise that individual workers have responsibilities. Though the legal wording varies between countries, the general theme is that employers and workers must exercise reasonable care to ensure safety and absence of risk to health.

## EMPLOYERS' RESPONSIBILITIES

Article 16 of C155 identifies some basic obligations placed on employers:

1. *"...to ensure that...the workplaces, machinery, equipment and processes under their control are safe and without risk to health.*
2. *...to ensure that...the chemical, physical and biological substances and agents under their control are without risk to health...*
3. *...to provide...adequate protective clothing and protective equipment to prevent...risk of accidents or of adverse effects on health."*

**Source: C155 Occupational Safety and Health Convention, 1981 (abbreviated)**

**© International Labour Organisation 1981**

These duties are very generally worded in the Convention. R164 expands on what they might mean in practice. It identifies some practical obligations to meet the objective of Article 16 of C155.

# Role of National Governments and International Bodies

## TOPIC FOCUS

Specifically, Article 10 of R164 puts the following obligations on employers:

- To provide workplaces and work equipment, and use work methods, which are safe and pose no risk to health.
- To provide appropriate instructions and training.
- To provide necessary supervision.
- To put in place health and safety arrangements adapted to suit the size and nature of the undertaking.
- To provide any necessary personal protective clothing and equipment free of charge.
- To ensure that the hours of work do not adversely affect employees' safety and health.
- To take measures to eliminate any extreme physical and mental fatigue.
- To stay up-to-date with knowledge in order to comply with the above.

In this way the responsibility is placed directly on the employer. However, it is also recognised that individual workers have a critical part to play in keeping workplaces safe, so workers are also given duties.

## WORKERS' RESPONSIBILITIES AND RIGHTS

Article 19 of C155 states that all workers and their representatives have to co-operate with their employer so that he or she can fulfil his or her safety obligations.

R164 provides more detail on this general duty.

## TOPIC FOCUS

R164 says that workers should:

- Take reasonable care of their own safety and that of other people who might be affected by the things that they do and the things that they fail to do.
- Comply with safety instructions and procedures.
- Use all safety equipment properly and not tamper with it.
- Report any situation that they believe could be a hazard and which they cannot themselves correct.
- Report any work-related accident or ill-health.

The Convention and Recommendation not only put a duty on workers but also give those workers rights.

In addition to the basic right to a safe workplace, Article 19 of C155 gives workers the following rights:

- The right to be provided with adequate information on actions the employer has taken to ensure occupational safety and health.
- The right to the necessary training in occupational safety and health.
- The right to be consulted by the employer on all matters of occupational safety and health relating to their work.
- The right to leave a workplace which the worker has reason to think presents an imminent and serious danger to his or her life or health and not be compelled to return until it is safe.

## THE ROLE OF ENFORCEMENT AGENCIES

There is no harmonised global standard for the enforcement of health and safety law, so legal and enforcement systems vary between countries. There are, however, some general principles that normally apply.

- Each country or region has one (or more) enforcement agency responsible for enforcing health and safety law. Such an agency is effectively the "health and safety police force". In some circumstances the agency may be, or may enlist the help of, the national or regional police. These agencies often provide advice, investigate workplace accidents, take formal enforcement action to force employers to comply with the law and start criminal proceedings against persons or organisations they believe have committed offences.
- Many countries have a separate fire authority with a role in enforcing fire safety legislation and/or advising employers.
- In some countries insurance companies fulfil a major role in enforcing safety, carrying out inspections and audits on a regular basis. These can help improve standards, as the insurance company can demand increased insurance premiums, or refuse to provide insurance cover at all unless standards are improved.

## CONSEQUENCES OF NON-COMPLIANCE

A breach of health and safety legislation is usually a criminal offence - wherever you are in the world.

Failure to meet legal standards might lead to:

- **Formal enforcement action:** an enforcement agency might force an employer either to make an improvement within the workplace within a given time period, or to stop carrying out high-risk activities altogether until improvements are made. Failure to comply with formal enforcement action is usually considered to be an offence in itself.



- **Prosecution of the organisation in the criminal courts:** successful prosecution might result in punishment in the form of a fine.
- **Prosecution of individuals, such as directors, managers and workers:** successful prosecution might result in punishment in the form of a fine and/or imprisonment.

As well as the criminal law consequences there is also the matter of compensation for workers and others injured by a workplace accident. Depending on the region/country concerned, this might involve the worker:

- Taking legal action against their employer through the civil legal system, and having to prove that their employer had been negligent and was therefore to blame for their injury.
- Claiming compensation from national or regional compensation schemes, with no requirement to prove negligence or blame through the use of the legal system.

## OTHER INTERNATIONAL STANDARDS

The International Organisation for Standardisation (ISO) is the world's largest developer of management standards. ISO has developed **ISO 9001** (the quality management standard) and **ISO 14001** (the environmental management standard). While these are not legal documents they have been adopted by many companies throughout the world because they demonstrate good management practice. The result is a common approach to managing quality and environmental matters.

At a technical level, ISO has been responsible for developing safety standards to which machinery, etc. should conform, e.g. ISO 12100: Safety of Machinery. As compliance with the recognised international standard demonstrates safety, national legislation often refers to these standards.

There is an internationally recognised standard for health and safety management. The Occupational Health and Safety Assessment Series (OHSAS) 18001 standard is compatible with ISO 9001 and ISO 14001.

## SOURCES OF INFORMATION

Information on national standards can be obtained from the relevant national regulatory bodies, who publish guidance documents that provide information on the legal standards required. Many of the regulatory bodies have websites, which are valuable sources of information, such as:

- Health and Safety Executive (HSE) in the UK at: <http://www.hse.gov.uk>
- Occupational Safety and Health Administration (OSHA) in the US at: <http://www.osha.gov>
- Worksafe in Western Australia at: <http://www.commerce.wa.gov.au/WorkSafe>

### MORE...

<http://www.ilo.org>

## REVISION QUESTIONS

4. Identify three of the legal duties that an employer has to comply with.
5. Identify two of the legal duties that a worker has to comply with.
6. What are the consequences for an employer of non-compliance with health and safety responsibilities?

(Suggested Answers are at the end.)

## SUMMARY

This element has dealt with some of the basic principles of workplace health and safety. In particular this element has:

- Explained that health and safety is a multi-disciplinary topic that requires knowledge across a wide range of subjects and that there are barriers to raising health and safety standards in a workplace.
- Introduced some of the key words that will be used in this course, such as: health; safety; and welfare.
- Highlighted the three main reasons why an organisation has to manage health and safety, which can be summarised as moral, social (or legal) and economic.
- Set out the basic requirements of the international standards that govern health and safety, i.e. the ILO Convention C155 and Recommendation R164.
- Looked in some detail at the duties that these two standards place on employers and on workers.
- Discussed the consequences for employers and workers of non-compliance with legal standards, together with the possible issue of worker compensation.
- Noted some sources of information on national health and safety standards.



## INTRODUCTION

To pass the NEBOSH International General Certificate you need to perform well during the exams. You only have two hours and your performance will be related to two key factors:

- The amount that you can remember about the elements you've studied; and
- Your success in applying that knowledge to an exam situation.

Being good at both aspects is essential. Being calm under exam pressure is pointless if you do not have a good knowledge of the information required to answer the exam questions.

Here we will consider some practical guidelines that can be used to increase success in the exam. Then you will find Exam Skills questions for you to answer at the end of each element.

## EXAM REQUIREMENTS

The IGC1 exam consists of two sections:

- Section 1 contains one question, which is likely to consist of a number of sub parts. This question in total is worth 20 marks.
- Section 2 contains ten questions, with each question being worth eight marks.

There is no choice of questions in the exam - all questions must be answered. The exam in total lasts two hours and NEBOSH recommend that you spend:

- about half an hour on Section 1; and
- about one and a half hours on Section 2.

## EXAM TECHNIQUE

In the exam, candidates often struggle because they have not understood the question that is being asked. They can interpret questions wrongly and therefore provide an answer for the question they **think** is being asked but, in reality, is not. To try to avoid this, let's look at a step-by-step approach that you can adopt when answering exam questions:

1. The first step is to read the question carefully. Be sure you know exactly what type of information the question is asking for.
2. Monitor the time. The 20-mark question in the first section should take around 25 minutes to answer, with five minutes' reviewing time. The eight-mark questions in Section 2 should take around eight minutes to answer. This will leave an accumulated time of ten minutes at the end of Section 2 to review your answers. It is really easy to spend more time than you should, churning out a fantastic answer to a question that you are confident about, but this could mean that you don't have time to attempt all the other questions. Equally, if you find a question particularly tough, sometimes it is better to move on to the next question and come back to it rather than spend too long trying to answer it and risk missing other questions out.

3. Next, consider the marks available. To award each mark the examiner must have a piece of information to award the mark against.
4. The next stage is to develop a plan - there are various ways to do this. Remind yourself again of the content of the question. Underline key words on the examination paper and focus on them to make sure you answer the question set. The answer plan is your memory aid and can take the form of a list, or a 'mind map' (simple diagram) that helps you unload information quickly and make sure you have enough factors (or things) in your answer that will attract the available marks. Keep re-reading the question to ensure your answer plan is going to answer the question asked.
5. When composing your answer it is essential that you pay proper attention to the command word (e.g. outline, describe, identify, explain) that has been used in the question. Candidates lose marks if the wrong approach is taken. Remember, you made a list to help your memory. The action word tells you how much information the examiner is expecting you to provide on the factors you have listed.

# Exam Skills

## COMMAND WORDS AND THEIR MEANINGS

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Below are some of the most commonly used instructions, with a translation of their meaning:

- **Identify** - select and name - commonly used in the Certificate exam.
- **Give** - provide an explanation of, give the meaning of - no description or depth is required.
- **Outline** - give the key features of. You need to give a brief description of something, or a brief explanation of reasons why. A great amount of depth and detail is not required, unlike 'Describe' and 'Explain' (see below). 'Outline' is commonly used in the Certificate exam.
- **Describe** - provide an in-depth description, a picture in words of what the thing is, what it looks like, how it works, etc. For 'Describe' questions a great amount of detail is needed. This is sometimes used in the Certificate exam.
- **Explain** - provide a detailed explanation - reasons why, reasons for, how it works, etc. Again, a great amount of detail is required. 'Explain' is usually used in a subdivided question so the detail required is tested in a narrowed-down field.

When it comes to the exam, make sure you indicate clearly which is your Answer Plan and which is your Final Answer, so that the examiner can be sure to mark the correct one.

## EXAM SKILLS PRACTICE

---

At the end of each element there is an Exam Skills question (or two) for you to attempt, with guidance on how to answer, in addition to a suggested answer outline. This includes an Answer Plan - all of the points listed in this would attract marks and you will see most of them developed in the suggested answer itself.

Remember that when answering exam questions, information from additional reading and personal experience can be included. Examining bodies encourage this and it will enhance your answers.

There is a time estimate at the beginning of each Exam Skills activity. Don't worry if the activity takes you a little longer than this - the timings are just there as a rough guide.



## QUESTION

Taking into account what we have just covered on exam technique, consider the following past exam question.

**Identify** possible costs to an organisation following an accident in the workplace.

(8)

### APPROACHING THE QUESTION

Think now about the steps you would take to answer the question:

1. The first step is to read the question carefully. This question calls for you to **identify**, so you don't need to give much detail - as we saw earlier, if asked to "identify" you are expected to "select and name", so in this case name the different possible costs.
2. Next, consider the marks available. In this question there are eight marks. The question doesn't ask for examples, so it is reasonable to assume that for eight marks you would be expected to identify eight costs. As the answer hasn't been limited to **only** eight factors, feel free to give a few extra in order to maximise the chance of gaining full marks. However, don't go overboard - watch the time! The question should take around eight minutes in total.
3. Now highlight the key words. In this case they might look like this:  
**Identify** possible **costs** to an organisation following an **accident** in the workplace. (8)
4. Read the question again to make sure you understand it and have a clear understanding of the costs of accidents. (Re-read your notes if you need to.)
5. The next stage is to develop a plan - there are various ways to do this. Your answer must be based on the key words you have highlighted. Remind yourself, first of all, that you need to be thinking about "What costs are there to an organisation if there is an accident?" Think broadly, not just about the more obvious costs.

### SUGGESTED ANSWER

Plan

#### Direct Costs

- First-aid treatment.
- Sick pay.
- Repairs to equipment.
- Lost or damaged product.
- Lost production time.
- Overtime cover for the injured person.
- Fines in criminal court.
- Compensation payment to victim.

#### Indirect Costs

- Investigation time.
- Lost employee morale.
- Cost of additional control measures.
- Compliance with enforcement notices.
- Cost of recruiting and retraining additional employees, e.g. for cover.
- Damaged customer relationships.
- Damaged public image.

Now have a go at the question yourself.



## POSSIBLE ANSWER BY EXAM CANDIDATE

*There are many costs of accidents, which can be divided into direct and indirect costs.*

*Direct costs may include first-aid treatment given to the victim, together with sick pay if they are off work and overtime costs incurred to cover their absence. Direct costs also include repairs to damaged equipment, and lost or damaged product arising from the accident. There may also be lost production time. In the event of legal action there may also be fines or compensation payments.*

*Indirect costs may include the time taken to investigate the accident, the costs of additional control measures to prevent recurrence and to comply with enforcement notices. There may also be costs associated with the training and recruitment of additional employees. Finally, there may be a loss of morale in the workforce, which could impact productivity, or damage the organisation's public image or customer relationships.*

## REASONS FOR POOR MARKS ACHIEVED BY CANDIDATES IN EXAM

Most candidates should have found this question straightforward. It wasn't a requirement of the question to structure the answer as "direct" and "indirect" costs; however, sometimes this is asked (which is why we did so here). A good structure does help ensure that items aren't missed and helps the examiner award marks easily.



# HEALTH AND SAFETY MANAGEMENT SYSTEMS 1 – POLICY



## LEARNING OUTCOMES

On completion of this element, you should be able to demonstrate understanding of the content by applying what you have learnt to familiar and unfamiliar situations. In particular you should be able to:

- 1 Outline the key elements of a health and safety management system.  
.....
- 2 Explain the purpose and importance of setting policy for health and safety.  
.....
- 3 Describe the key features and appropriate content of an effective health and safety policy.  
.....



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# Key Elements of a Health and Safety Management System

## KEY INFORMATION

The ILO-OSH 2001 Safety and Health Management System can be summarised as: Policy, Organising, Planning and Implementation, Evaluation, Action for Improvement, and Audit.

## TOPIC FOCUS

- **Policy** - A clear statement has to be made to establish health and safety as a prime commitment of management at all levels of the organisation, but particularly at the top.
- **Organising** - A framework of roles and responsibilities for health and safety must be created within the organisation, from senior management down to the front-line workers, including the appointment of specialist staff.
- **Planning and Implementing** - Detailed arrangements must be made for the management of health and safety. Central to this idea is the concept of risk assessment and the identification and implementation of safe systems of work and protective measures.
- **Evaluation** - Methods must be devised to monitor and review the effectiveness of the arrangements put into place. This might be done reactively, e.g. by reviewing accident and ill-health statistics, or actively, e.g. by reviewing inspection reports.
- **Action for Improvement** - Any shortcomings identified by the review process must be corrected as soon as possible by making whatever adjustments are necessary to the policy, organisation and arrangements for implementation.
- **Audit** - Arrangements must be made for the independent, systematic and critical examination of the safety management system to ensure that all parts are working acceptably well.
- **Continual Improvement** - The intention is that the safety management system will not remain static but will develop over time to become increasingly appropriate and useful to the organisation that it exists to serve.

## ILO-OSH 2001 SAFETY AND HEALTH MANAGEMENT SYSTEM

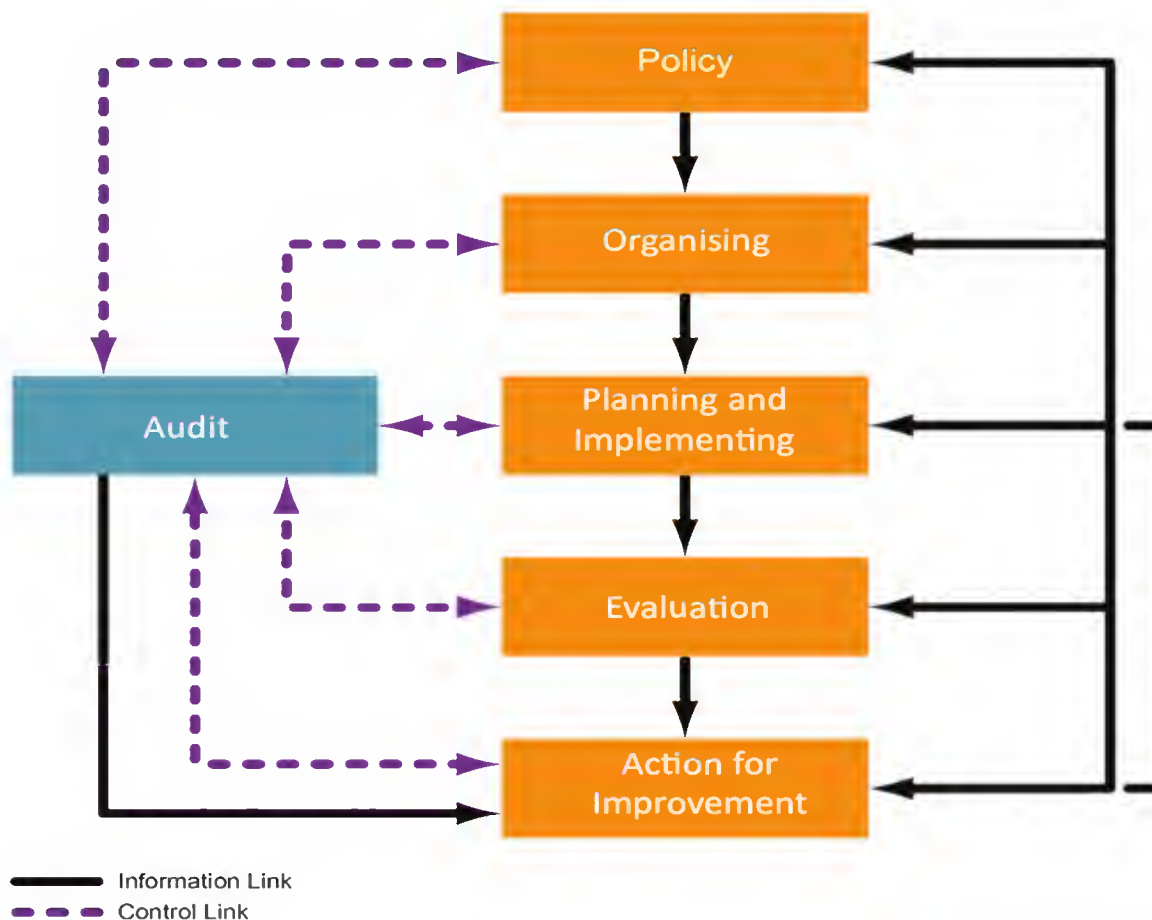
The management of workplace health and safety must be considered systematically within an organisation, in the same way as any other form of management. A systematic approach to management is often linked to the “PDCA cycle”:

- Plan.
- Do.
- Check.
- Act.

This general approach has been used in many management systems, including the ISO 9001 Quality Management System and the ISO 14001 Environmental Management System mentioned earlier.

Many different health and safety management systems exist, using a similar format, e.g. the OHSAS 18001 health and safety management standard. All these safety management systems have common principles, which are demonstrated in the ILO’s Occupational Safety and Health Management System, ILO-OSH 2001. We can summarise the key elements of this system as: Policy, Organising, Planning and Implementation, Evaluation, Action for Improvement, and Audit.

# Key Elements of a Health and Safety Management System



The ILO-OSH 2001 Safety Management System

## MORE...

<http://www.ilo.org/safework/info/standards-and-instruments>

## REVISION QUESTIONS

1. What are the organisational requirements for effective health and safety management?
  2. What is the role of evaluation?
- (Suggested Answers are at the end.)

# Purpose and Importance of Setting Policy for Health and Safety

## KEY INFORMATION

- The health and safety policy of an organisation is an important document that sets out the organisation's aims with regard to health and safety, who is responsible for achieving these aims, and how the aims are to be achieved.
- The policy has a role in the decision-making of both senior management, who formulate it, and middle and junior management, who are required to implement it.

## ROLE OF THE HEALTH AND SAFETY POLICY IN DECISION-MAKING

One foundation stone of good health and safety management in any organisation is the health and safety policy. A good health and safety policy sets out the organisation's general approach and commitment to achieving particular aims and objectives. It provides a framework of general and specific health and safety responsibilities for staff, and guidance on the detailed operational arrangements to be taken to protect employees and others from harm as a result of workplace activities.

In particular the policy should influence decision-making within the organisation. This will occur in two ways:

- Firstly, senior management have to decide what kind of health and safety standards they are committing the organisation to, and will have to allocate resources accordingly.
- Secondly, other managers have to ensure that their decision-making is in line with the policy and does not work against the organisation's stated aims and objectives.

There is no one correct format or set of contents for a health and safety policy, but it must reflect the particular circumstances of the individual organisation: the hazards and risks, the size, and the complexity of the organisation. The policy must therefore be developed and tailored to fit the particular organisation that it exists to serve. For example, the safety policy of a small, low-risk manufacturing company may be very different from that of a large, high-risk oil and gas multinational.

## REVISION QUESTION

3. Why might the health and safety policy of two organisations, both undertaking similar work, be different?

(Suggested Answer is at the end.)

# Key Features and Content of a Health and Safety Policy

## KEY INFORMATION

- A health and safety policy is usually presented in three parts: the General Statement of Intent, the Organisation section, and the Arrangements section.
- The General Statement of Intent outlines the importance that the organisation places on health and safety and the commitment that can be expected. It sets aims and objectives for the organisation to achieve. It is signed by the person in overall control of the organisation.
- The Organisation section highlights the roles and responsibilities that exist at all levels within the organisation. It shows the lines of responsibility and accountability.
- The Arrangements section provides the detail on how the organisation manages health and safety. It outlines the general arrangements that relate to health and safety management and the specific arrangements that relate to individual health and safety topics and issues.
- Health and safety policies have to be reviewed in order to stay current and relevant.

## GENERAL STATEMENT OF INTENT

This spells out the organisation's overall approach to health and safety management, and its aims in terms of performance. It must commit the organisation to achieving legal compliance, and in many cases the commitment will be to achieving a higher standard than that set by the law, either as a matter of corporate policy or because of the nature of the organisation. The Statement will also usually contain goals and objectives for the organisation.

The Statement of Intent should recognise that managers and workers at all levels within the organisation have a part to play in implementing policy, and it will therefore state very clearly that every person must comply with the policy and that serious breaches of policy may be treated as disciplinary offences.

The General Statement of Intent should be:

- Signed by the person at the top of the organisation (Chief Executive Officer (CEO), Managing Director (MD), etc.) to authorise the policy and indicate that the policy commitment comes from the highest level. This person also has ultimate responsibility for health and safety in the organisation so should be committed to the policy's contents.
- Dated, to indicate when the current statement was prepared and provide a reference point for review.

## TOPIC FOCUS

### Objectives

The Statement of Intent may recognise some general objectives that have to be achieved by the organisation, such as:

- Meeting legal obligations.
- Provision of a safe workplace, safe equipment and safe systems of work, information, instruction, training and supervision.
- Risk assessment of all relevant workplace activities.
- Performance monitoring.
- Provision of adequate resources, such as expert health and safety advice.
- Effective communication and consultation with workers.

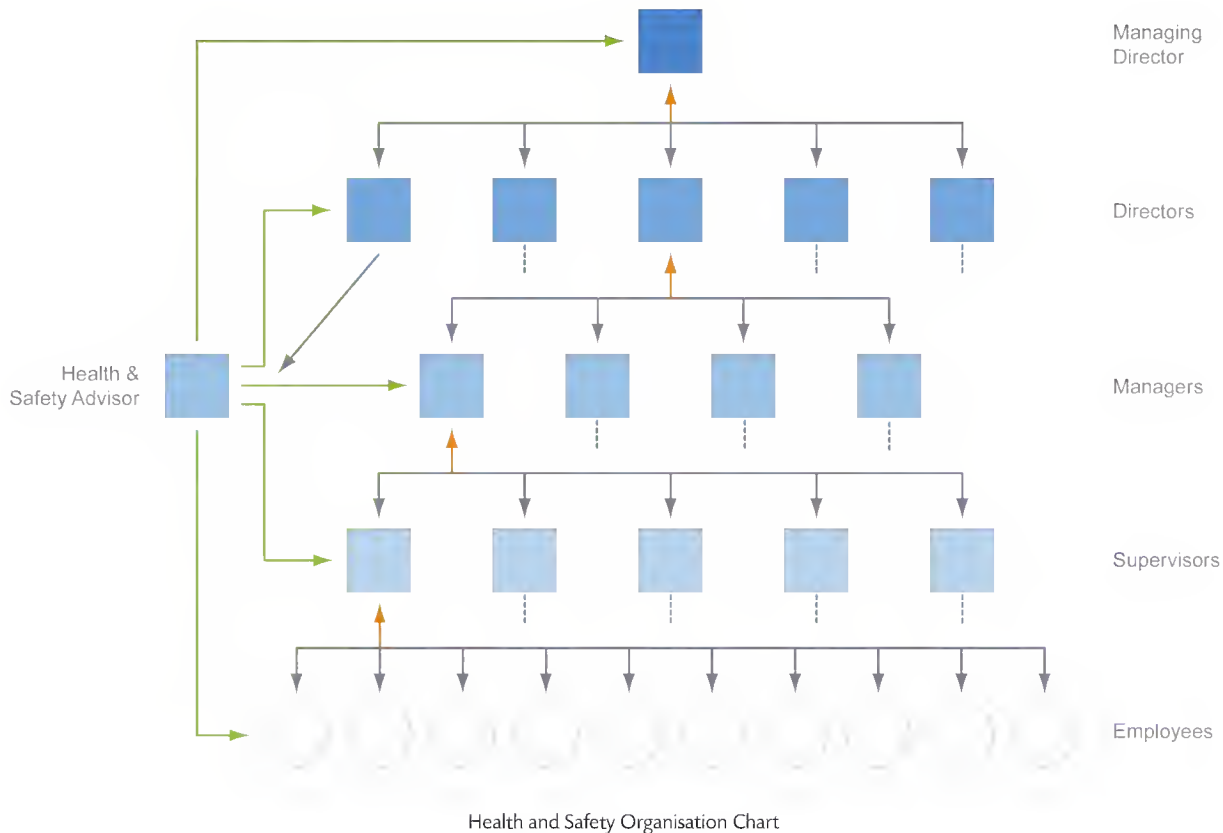
### Targets

The Statement of Intent may also set quantifiable targets for the organisation to achieve. Targets are useful, as they allow performance to be measured and provide a tangible goal for staff to aim for. They also help drive continual improvement. Possible targets might relate to:

- **Accident rates:** to achieve a reduction in the accident or ill-health rate.
- **Active monitoring:** to complete successfully a number of active monitoring activities, such as:
  - Successful completion of 90% of all supervisor safety inspections over a year.
  - Completion of key activities, such as carrying out risk assessments across the organisation.
  - Delivery of training to all workers.
  - Development of a consultation process to engage the workforce.

Targets may be set in relation to past performance, or the performance of other similar organisations, or the industry as a whole. The process of comparing performance in this way is known as “benchmarking”. So, if fatal road-accident rates in an industry as a whole are, for example, one for every 100,000 miles driven, the target for a particular organisation may be to achieve that standard, or have a lower rate.

# Key Features and Content of a Health and Safety Policy



## ORGANISATION (HEALTH AND SAFETY ROLES AND RESPONSIBILITIES)

This section of the health and safety policy deals with people and their operational duties in relation to health and safety. It outlines the chain of command for health and safety management and identifies the roles and responsibilities of staff to enable clear delegation of duties. It is standard practice for this section to include an organisation chart showing the lines of responsibility and accountability (in terms of health and safety management). This chart also shows the lines of communication and the feedback routes that exist within the organisation for clear reporting.

The figure above shows a typical organisation chart for a company. The grey lines show "line management responsibility" flowing down through the structure. The green lines show the "functional responsibility" that the health and safety manager has for providing advice at all levels of the organisation.

The orange lines show the lines of communication and feedback up through the structure.

The Organisation section will usually reflect the management hierarchy within the organisation and allocate responsibilities accordingly:

- The CEO or MD - ultimately responsible and accountable for the entire organisation.
- Management at all levels - responsible for ensuring that all appropriate safety measures are in place and being carried out effectively within the part of the organisation under their management control. This might be done by breaking down the management hierarchy into discrete layers and allocating responsibilities to each layer; e.g. senior managers' responsibilities, middle managers' responsibilities, supervisors' responsibilities.
- All employees - responsible for acting safely at all times in the course of their duties at work.
- Competent persons - have operational duties but are also considered competent to carry out one or more specialist health and safety duties, e.g. as first-aiders, fire marshals, etc.
- Specialist health and safety practitioners - responsible for providing advice to support management and employees in achieving safety.



## TOPIC FOCUS

General health and safety management arrangements:

- Carrying out risk assessments.
- Identifying and supplying health and safety information, instruction and training.
- Accident and near-miss reporting, recording and investigation.
- Consultation with workers on health and safety matters.
- Developing safe systems of work and permit-to-work systems to control hazards.
- Welfare and first-aid provision.
- Housekeeping.
- Fire safety and prevention.
- Emergency procedures.
- Communication of health and safety matters, including hazards and control measures.
- Compliance monitoring, including auditing of systems but also measuring workplace parameters, e.g. noise, to assess the effectiveness of the arrangements.

## ARRANGEMENTS

The Arrangements section is often the largest section of the policy. It deals with the general arrangements that exist to manage health and safety and the specific arrangements that are necessary to deal with particular risks relevant to the organisation and its activities. The systems and procedures used to manage health and safety are contained in this section.

All the **general** health and safety management issues will be relevant to all workplaces; they are generic issues. However, the practical arrangements made for the management of these issues will have to be tailored to suit the organisation.

Depending on the workplace, **specific** health and safety arrangements will also have to be developed to deal with particular risks.

The list of possible arrangements that might be required can be long and depends on the problems and issues faced by the organisation in question. For example, a lorry haulage company will have a set of arrangements to manage transport risk, but an office-based company will not.

Examples of specific risks and problems within an organisation that may need detailed arrangements include:

- Lone working.
- Noise-exposure control.
- Vibration-exposure control.
- Control of exposure to toxic materials.
- Control of contractors and visitors.
- Control of transport risks.
- Waste disposal.

Not all organisations will have all of these risks - these are "specific" to the organisation and its function. Control of exposure may require health surveillance and PPE, the use and maintenance of which should be covered in the arrangements.

# Key Features and Content of a Health and Safety Policy

## REVIEWING POLICY

A health and safety policy should not be considered as rigid and unchanging. Instead, it should be subject to regular review so that it remains current and relevant. In this way it can be kept a “live” document.

It is good practice to review policy on a regular basis, e.g. annually. However, there are other circumstances which could give rise to reviews.

The aim of the review is to make sure that the policy is up-to-date and accurate. The date of the previous review should be recorded on policy documents to indicate how current they are.

## Standards and Guidance

Article 14 of the International Labour Organisation’s Occupational Safety and Health Recommendation 1981 (R164) states:

*“Employers should, where the nature of the operations in their undertakings warrants it, be required to set out in writing their policy and arrangements in the field of occupational safety and health, and the various responsibilities exercised under these arrangements, and to bring this information to the notice of every worker, in a language or medium the worker readily understands.”*

**Source: R164 Occupational Safety and Health Recommendation, 1981**

## © International Labour Organisation 1981

The ILO’s Occupational Safety and Health Management System, ILO-OSH 2001, has additional guidance on safety policy. National governments usually have specific guidance on what this actually means in practice in a given region. For example, in the UK, the HSE publishes several guidance documents on the topic.

## MORE...

<http://www.ilo.org/public/english/protection/safework/managmnt/guide.htm>

<http://www.hse.gov.uk>

## TOPIC FOCUS

Circumstances that might require a review of policy:

- Technological changes, e.g. introduction of new plant or processes.
- Organisational changes, e.g. changes to key personnel, such as a new CEO or MD, or changes to the management structure of the organisation.
- Legal changes, such as the introduction of new legislation applicable to the organisation.
- Changes to the type of work that the organisation does.
- Where an audit, investigation or risk assessment suggests the policy is no longer effective.
- When requested by a third party, such as an insurance company or client.
- Following enforcement action.
- Following consultation with the workforce.
- After the passage of time (e.g. an annual review is a common practice).

## REVISION QUESTIONS

4. What are the three key elements of a health and safety policy?
5. Who should sign the policy statement?
6. What health and safety responsibilities do all workers have?
7. What does a safety organisation chart show?
8. What circumstances might require a review of policy?

(Suggested Answers are at the end.)

## SUMMARY

This element has dealt with the Policy element of health and safety management systems. In particular this element has:

- Overlooked the ILO-OSH 2001 health and safety management system, which can be summarised as: Policy, Organising, Planning and Implementation, Evaluation, Action for Improvement, and Audit.
- Identified the health and safety policy of an organisation as an important document, which sets out what the organisation's aims are with regard to health and safety, who is responsible for achieving those aims, and how those aims are to be achieved.
- Explained that the policy is usually presented in three parts: the General Statement of Intent, the Organisation section, and the Arrangements section:
  - The General Statement of Intent communicates the importance that the organisation places on health and safety, the commitment that can be expected and the aims and objectives for the organisation to achieve. It is signed by the person in overall control of the organisation.
  - The Organisation section deals with the roles and responsibilities that exist within all levels of the organisation and indicates the lines of responsibility and accountability.
  - The Arrangements section provides the detail on how the organisation manages health and safety. It outlines the general arrangements that relate to health and safety management and the specific arrangements that relate to individual health and safety topics and issues.
- Noted that health and safety policies have to be reviewed in order to stay current and relevant, and that reviews might be carried out periodically, or in response to changes, such as those to key personnel or management structure.



## QUESTION

- (a) **Identify** a range of health and safety targets that may be included in the 'statement of intent' section of a health and safety policy. (4)
- (b) **Describe** the purpose of:
- (i) the 'organisation' section of a health and safety policy; (2)
  - (ii) the 'arrangements' section of a health and safety policy. (2)

### APPROACHING THE QUESTION

Think now about the steps you would take to answer the question:

- The first step is to read the question carefully. Note that part (a) of the question asks you to **identify** possible health and safety targets that may be included in the statement of intent. As we saw earlier, to "identify" something you need to select and name the key issues. We haven't tackled a description yet - for a "describe" question you need to provide an in-depth description, a word picture of what the thing is, what it looks like, how it works, etc. This requires a great amount of detail, and candidates who don't "describe" where required to will not gain the marks. So, in part (b) of this question you are required to produce descriptions of the purpose of the organisation and arrangements sections of the policy.
- Next, consider the marks available. In this question there are eight marks, so it is expected that around eight or nine different pieces of information should be provided. Questions that are split into parts (this one is split into two parts worth four marks each) are often easier to pick up marks on, because the signposts NEBOSH use are so much easier to see. In the first part the question asks you to "identify" and is worth four marks, so you should provide four targets. The second part is a description of the purpose of the organisation and arrangements sections of the policy, which are worth two marks each. The whole question should take around eight minutes, which is a mark per minute!
- Now highlight the key words. In this case they might look like this:
 

(a) **Identify** a range of **health and safety targets** that may be included in the **'statement of intent' section** of a health and safety policy. (4)

- (b) **Describe** the **purpose** of:
- (i) the **'organisation' section** of a health and safety policy; (2)
  - (ii) the **'arrangements' section** of a health and safety policy. (2)

- Read the question again to make sure you understand it and have a clear understanding of health and safety policy and safety targets. (Re-read your notes if you need to.)
- The next stage is to develop a plan - there are various ways to do this. Remind yourself, first of all, that you need to be thinking about 'the health and safety targets that could be included in the policy statement' for the first part; and 'the purpose of the organisation and arrangements sections' for the second part.

The answer plan will take the form of a bullet-pointed list that you need to develop into a full answer.

Your answer must be based on the key words you have highlighted. So, in this case we need to identify the targets that may be included in a statement of intent, then describe the purpose of the organisation and arrangements sections of the policy.

Now have a go at the question. Draw up an answer plan, and then use it as the basis to write out an answer as you would in the exam.

**Key hints:** although we know part (a) is worth four marks, if you give a couple of additional targets it may maximise your chance of gaining all four marks (though you **won't** get more than four marks!) For each subsection of part (b), you will get two marks for the description - therefore it needs to be detailed enough to show that you understand, for example, the purpose of the arrangements section. But you don't need to write an essay - a few sentences should be enough!

When you have finished, compare your plan and full answer with those that follow.

## SUGGESTED ANSWER

---

Plan

Targets (and Objectives)	Organisation (Purpose)	Arrangements (Purpose)
<ul style="list-style-type: none"><li>• Meet legal requirements.</li><li>• Safe workplace/equipment/systems.</li><li>• Provision of training and information.</li><li>• Risk assessment.</li><li>• Adequate resources.</li><li>• Communication and consultation with workforce.</li><li>• Reduced accidents and ill-health.</li><li>• Carrying out active monitoring.</li></ul>	<ul style="list-style-type: none"><li>• The responsibilities for implementing policy.</li><li>• Identifies operational duties for health and safety.</li><li>• Identifies chain of command.</li><li>• Identifies roles and responsibilities.</li><li>• Covers all levels of the organisation, director to shop floor.</li><li>• Includes specialist roles, e.g. first-aiders and safety advisors.</li></ul>	<ul style="list-style-type: none"><li>• The arrangements for implementing policy.</li><li>• Arrangements in place to manage health and safety.</li><li>• Specific arrangements for key risks.</li></ul>

Now have a go at the question yourself.



## POSSIBLE ANSWER BY EXAM CANDIDATE

- (a) An employer may identify a range of targets in the statement of intent. These could include the organisation's compliance with the law, the provision of a safe working environment with safe equipment and procedures. The targets could also include the development of risk assessments for business activities, and the provision of information and training to employees as a result of the risk assessments. It is also common to include targets to reduce the accident rate in the organisation, which may also include a target to carry out active monitoring to reduce workplace hazards.
- (b) (i) The purpose of the organisation section of the policy is to establish the roles and responsibilities for health and safety at all levels within the business, from director down to shop-floor and office employees. The organisation section will also include specialist safety roles, such as fire wardens, first-aiders and safety advisors. The organisation section identifies who is going to deliver the objectives in the health and safety policy.
- (ii) The purpose of the arrangements section of the policy is to establish how the safety policy is to be achieved. This is done by producing procedures which detail how hazards in the organisation are to be identified through risk assessment and controlled, e.g. fire, first aid, spill response, etc.

## REASONS FOR POOR MARKS ACHIEVED BY CANDIDATES IN EXAM

- Many candidates were less confident about the purpose of the arrangements section and therefore provided a poor answer to part (b) (ii).
- Many candidates will have lost marks for not providing the descriptions required in part (b).



# HEALTH AND SAFETY MANAGEMENT SYSTEMS 2 – ORGANISING

ELEMENT

3

## LEARNING OUTCOMES

On completion of this element, you should be able to demonstrate understanding of the content by applying what you have learnt to familiar and unfamiliar situations. In particular you should be able to:

- 1 Outline the health and safety roles and responsibilities of employers, managers, supervisors, workers and other relevant parties.  
.....
- 2 Explain the concept of health and safety culture and its significance in the management of health and safety in an organisation.  
.....
- 3 Outline the human factors that influence behaviour at work in a way that can affect health and safety.  
.....
- 4 Explain how health and safety behaviour at work can be improved.  
.....
- 5 Outline the need for emergency procedures and the arrangements for contacting emergency services.  
.....
- 6 Outline the requirements for, and effective provision of, first aid in the workplace.  
.....



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# Organisational Health and Safety Roles and Responsibilities

## KEY INFORMATION

- Ultimate responsibility for ensuring that the workplace is safe and free of health risk rests with the employer.
- Directors and senior managers have a duty to ensure that their organisation meets this obligation. In particular, they are responsible for setting policy and allocating resources to allow that policy to work effectively - this includes the provision of competent health and safety advisors. They must demonstrate clear commitment and leadership, which usually includes appointing a senior manager with responsibility for health and safety.
- Middle managers and supervisors have a duty to ensure that the part of the organisation under their control is safe and free of health risk. They execute the policy of their organisation operationally.
- Safety specialists are responsible for giving correct advice and guidance to the organisation and its workers.
- Workers have a duty to take reasonable care of their own health and safety and the health and safety of others.
- Controllers of premises are responsible for ensuring that the premises they control are safe to use as a workplace and that access to and from the workplace is safe.
- The self-employed have a duty to take reasonable care of their own health and safety and the health and safety of others.
- Suppliers, manufacturers and designers have a duty to ensure that plant, equipment and substances supplied for use at work are safe, tested and supplied with safety information (where appropriate).
- Contractors are responsible for their own safety and the safety of others who their work might affect. Clients are also responsible for ensuring that the contractors they engage are competent and supervised.
- When two or more employers share a workplace they must co-operate and co-ordinate their activities to ensure good health and safety standards.

## THE EMPLOYER

Responsibility for ensuring that the workplace is safe and free of health risk rests with the employer. As we noted earlier, the ILO Convention C155 and Recommendation R164 make the duty of the employer clear. These international standards are normally reflected in local law. Look again at the appropriate section in Element 1 to remind yourself of the employer's duties. It is important to consider who an employer owes a duty to:

- His or own employees, to ensure their health and safety.
- Other workers who might be working within his or her workplace but are not direct employees, e.g. casual workers, agency workers, contractors.
- Workers who are not his or her employees and are not working in his workplace but are carrying out work on his or her behalf, e.g. contractors installing a piece of machinery on behalf of the employer at a client's premises.

- People who might be in his or her workplace but not carrying out work on his or her behalf, e.g. visitors.
- People who might be outside his or her workplace, but are affected by his or her work activities, e.g. members of the public passing by.

So an employer has some responsibility for the health and safety of everyone who might be affected by what he or she does for work, whether they are his or her employees, or not.

## GLOSSARY

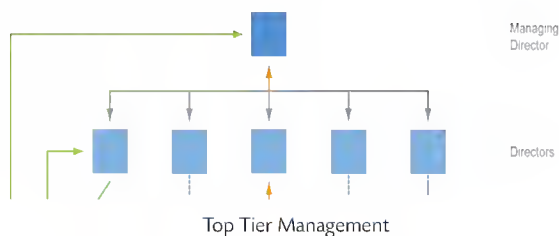
### THE EMPLOYER

The employer in this context is normally an organisation, and is sometimes referred to as the "corporate body".

# Organisational Health and Safety Roles and Responsibilities

## DIRECTORS AND SENIOR MANAGERS

Directors and senior managers give an organisation its direction and set its priorities. They decide what the organisation does and how it does it. In effect they control the corporate body. They are, therefore, responsible for ensuring that all of the legal requirements that rest with the employer are met.



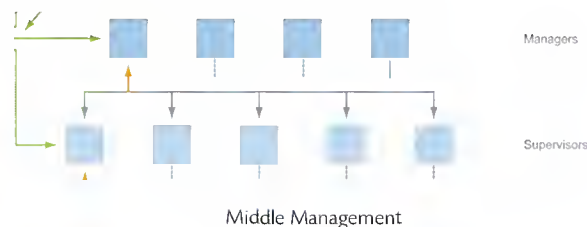
But directors and senior managers are rarely involved in the day-to-day management of the operational side of the organisation. Their role does not normally involve “doing”, but rather “setting strategy” and allocating resources. So the responsibility of directors and senior managers is to ensure that:

- The right health and safety policy is put in place.
- Adequate resources are allocated to establish, implement and maintain the health and safety management system. This includes sufficient funding to deliver the objectives in the policy, but also competent personnel to assist in the delivery of the policy objectives.
- The right organisational structures with clear roles and responsibilities are put in place.
- A senior manager is appointed with specific responsibility for health and safety.
- One or more competent persons are appointed to assist the organisation in meeting its health and safety obligations.
- The health and safety performance of the organisation is reviewed on a regular basis to ensure that the objectives are being achieved and that the objectives and measures in place remain valid.

Directors and senior managers can have enormous influence over their organisation and its priorities. This influence does not simply come from their strategic decision-making but also from the way they are perceived by those lower in the management hierarchy. They must demonstrate clear commitment and leadership with regard to health and safety.

## MIDDLE MANAGERS AND SUPERVISORS

Middle managers and supervisors are involved in the day-to-day operational running of the organisation so are responsible for the health and safety standards within the operations under their control. Their operational areas of responsibility are normally defined in the Organisation section of the policy and illustrated by the organisation chart.



Line managers will be operationally responsible for the health and safety of:

- The staff that work directly for them (their direct reports).
- Staff lower down in the organisational chart (below their direct reports).
- The areas and activities under their control.

## SAFETY SPECIALISTS

Organisations must have access to appropriate competent people to give them health and safety advice. These safety specialists or “safety practitioners” may work as managers within the organisation or may be brought in from outside as contractors. They are responsible for giving correct advice to the organisation so that the organisation can meet its legal obligations and achieve its policy aims, and will require adequate resources to support their role.

Typical responsibilities of the safety specialist include:

- Providing advice and guidance on health and safety standards.
- Promoting a positive health and safety culture.
- Advising management on accident prevention.
- Developing and implementing policy.
- Overseeing the development of adequate risk assessments.
- Identifying training needs.
- Monitoring health and safety performance.
- Overseeing accident reporting and investigations.

## WORKERS

Workers have a responsibility to take reasonable care of their own health and safety and the health and safety of other people who might be affected by the things that they do (their acts) and the things that they fail to do (their omissions). Workers also have a responsibility to co-operate with their employer (for health and safety reasons). These duties apply when the worker is at work.



## GLOSSARY

### AT WORK

This means when the worker is in the workplace, or outside the workplace but carrying out the duties of their employer. It usually applies during work breaks and work-related travel and, in some countries, would also apply to commuting (travel to and from work at the start and finish of a work period).

## CONTROLLERS OF PREMISES

A person or an organisation can make a workplace available for other people to work in and yet not be those workers' employer. A common example of this is a building owner or property management agency that has a commercial building and leases space in that building to various other organisations for them to use as offices. In this instance the owner or agency is not the employer; instead they are referred to as the "controllers of the premises".

Controllers of premises will be responsible for certain health and safety matters that are within their control, but not for matters that are outside their control. For example, they will be responsible for ensuring the safety of the outer fabric of the building and of the building entrance and external fire-escape routes, but not for the safety of a photocopier that belongs to one of their tenants and is used in that tenant's office.

Controllers of premises are responsible for ensuring that:

- The premises are safe to use as a workplace, to the extent that they have control.
- Access to and from the workplace is safe, to the extent that they have control.

## THE SELF-EMPLOYED

The self-employed have similar responsibilities to workers in that they have a responsibility to take reasonable care of their own health and safety and the health and safety of others who might be affected by their acts or omissions.

## SUPPLIERS, MANUFACTURERS AND DESIGNERS

There are many items of plant and equipment and many types of substance (chemicals) that are used for work purposes. The designers, manufacturers, importers and suppliers of these items and substances form the "supply chain" and they have responsibilities relating to the health and safety of their products.

## TOPIC FOCUS

For items of **plant** and **equipment** those involved in the supply chain are responsible for ensuring that they:

- Are adequately designed, constructed and tested so as to be safe for their intended purpose.
- Come with appropriate instructions.

For **chemicals** and **substances** those involved in the supply chain are responsible for ensuring that they:

- Are appropriately tested so that their hazardous properties are understood.
- Are appropriately packaged and labelled.
- Come with appropriate information (usually in the form of a Material Safety Data Sheet (MSDS)).

## CONTRACTORS

Contractors are responsible for their own health and safety and the health and safety of others who might be affected by their work activities, e.g. a contractor might be held responsible if they bring an unsafe power tool into a client's factory and injure themselves, one of the client's employees, or a visitor.

As we noted earlier, a client (as an employer) is responsible for the health and safety of his employees and visitors. This responsibility is shared between the client and contractor.

If a client can be held responsible for an injury caused by a contractor working for the client then it must be in the client's own best interests to ensure that contractors do not endanger workers or others.

# Organisational Health and Safety Roles and Responsibilities

## GLOSSARY

### CONTRACTOR AND CLIENT

**Contractor** - a person or organisation engaged to undertake certain work on behalf of a client but not under the client's direct supervision and control.

**Client** - a person or organisation who engages a contractor.

The way that a client manages contractors can be broken down into the following key areas:

- Selection of the right contractor.
- Planning of the work.
- Co-ordination of the work between client and contractor.
- Monitoring of the work to ensure that the contractors are working to the agreed health and safety standards.

## TOPIC FOCUS

### SELECTING THE CONTRACTOR

It is good practice to select a contractor carefully on the basis of their health and safety competence. To help in this you can ask to see evidence of competence, such as:

- A copy of their health and safety policy.
- Examples of risk assessments.
- The qualifications and training records of staff.
- Membership of a professional organisation or certified body.
- Records of maintenance and test for plant and equipment.
- Names of previous or current clients.
- Accident history records.
- Records of enforcement action taken by authorities against them.
- Proof of adequate resources, such as access to specialist safety advice.

## Planning the Work

Information must be exchanged between the client and the contractor. The client should tell the contractor about the hazards and risks in the workplace, and the contractor should tell the client about the hazards and risks created by the contract work. In this way the work can be planned so that everyone is kept safe.

The contractor should carry out risk assessments on the work involved and develop safe working methods to control the risks identified. This safe working method must be documented and is often referred to as a "method statement".

## Co-ordination of the Work

The client and contractor must co-ordinate their work carefully so as not to conflict. There may be several contractors working on site at any one time and the activities of one person/organisation must not cause a hazard for another in the area. For example, if one contractor is working at height it would be sensible to avoid others working beneath them in that area.

## Monitoring the Work

Arrangements must be made by the client to ensure the contractor complies with safe working practices. These arrangements should include:

- Having a signing in and out procedure.
- Ensuring that the contractor provides a named works foreman.
- Carrying out site induction training for all contractor workers.
- Controlling high-risk activities with a permit-to-work system.

The client will need to monitor the contractor's work to ensure that the contractor is working to agreed safety standards. This can be done by monitoring against the method statement that was developed during the planning stage.



A client's project manager monitors the work of a contractor



## JOINT OCCUPIERS OF PREMISES

When two employers share a workplace it is not difficult to imagine that the risks that one employer creates in that workplace may affect the employees of the other employer. For example, where two employers occupy offices in the same building, the fire risk created by one employer affects the safety of the employees of the other.

It follows that both employers must co-operate and co-ordinate their activities to ensure good health and safety standards. This requires effective communication between employers, the exchange of relevant information and the development of appropriate policies and procedures. This could be carried out in a variety of ways, depending on the nature of the work and the worksite.

So, for example, in a multi-storey office building occupied by ten different businesses, each employer should provide information on the risks that their specific business creates for other occupiers of the building. This can often be achieved by establishing a building management committee, with regular meetings. Consultation can then take place through this committee, and policies and procedures can be developed and implemented throughout the building, as necessary.

In this way a common approach can be developed for the management of joint issues such as fire procedures, security threat response, emergency spill response, site rules, visitor and contractor control, traffic management, etc. It may also be appropriate to have a site-wide inspection process, common fire drills and even shared waste-disposal procedures. Also, if there are specific risks associated with one workplace, then awareness of the issues and the appropriate response from other workplaces can be raised. For example, an agency that deals with violent offenders may share a building with unrelated businesses; those other businesses need to understand the risks and precautions appropriate to the building as a whole. Employers working more closely together may need to share risk assessments, to ensure that all organisations are aware of the possible impact of the use of equipment and substances so that activities can be co-ordinated. For example, one organisation may be using solvent-based paints while an area is occupied by another organisation's personnel.

### MORE...

<http://www.ilo.org/safework/lang--en/index.htm>

## REVISION QUESTIONS

1. Which categories of people does an employer owe a duty to?
2. Outline common duties of employees.
3. Where business premises are rented, is the employer responsible for health and safety matters relating to points of entry to and exit from the workplace?
4. Outline the areas of responsibility placed on people in the supply chain for the articles and substances that they supply to workplaces.
5. Outline the responsibilities of the client and the contractor where a contractor is working in a client's workplace.

(Suggested Answers are at the end.)

# The Concept and Significance of Health and Safety Culture

## KEY INFORMATION

- The safety culture of an organisation is the way that all the people within the organisation think and feel about health and safety and how this translates into behaviour. It can be defined as the shared attitudes, values, beliefs and behaviours relating to health and safety.
- There is a strong link between safety culture and health and safety performance. Organisations with a strong, positive culture tend to have good performance, whereas those with a negative culture perform poorly.
- The safety culture of an organisation can be assessed by looking at indicators such as accidents, sickness rates, absenteeism, staff turnover, compliance with rules, and worker complaints.

## HEALTH AND SAFETY CULTURE

All organisations have a “culture”, which is not written down or even easily stated. It is a subtle mix of formal and informal rules, relationships, values, customs, etc. which, taken together, describe the distinctive “feel” of the organisation. On one level, this is to do with how the organisation gets things done - its particular way of doing things. On another level, it is to do with how people perceive the organisation, e.g. how friendly it is.

Organisational culture is a characteristic of the organisation that exists at every level, from senior management to shop-floor workers. No one person determines the culture of the organisation; all staff working for the organisation determine it collectively.

Organisations can be described as having a “health and safety culture” (or safety culture) in much the same way. Safety culture can be defined as **the shared attitudes, values, beliefs and behaviours relating to health and safety**. It is the result of the shared attitudes, beliefs, competencies, perceptions and patterns of behaviour in the organisation. This determines the management’s commitment to, and style of, health and safety management.

The safety culture of an organisation is the way that everyone within the organisation thinks and feels about health and safety and how this translates into their behaviour.

## TOPIC FOCUS

Factors that have a negative impact on health and safety culture in an organisation include:

- Lack of leadership from management.
- Presence of a blame culture.
- Lack of management commitment to safety, e.g. saying one thing and doing another.
- Health and safety receiving lower priority than other business issues.
- Organisational changes (frequent or poorly communicated change can result in uncertainty).
- High staff turnover rates.
- Lack of resources, e.g. too few workers due to downsizing.
- Lack of worker consultation.
- Interpersonal issues, e.g. peer-group pressure, bullying or harassment.
- Poor management systems and procedures.
- External influences, e.g. economic climate resulting in difficult operating conditions.

## RELATIONSHIP BETWEEN SAFETY CULTURE AND PERFORMANCE

An organisation will have either a positive safety culture or a negative one.

### Positive Culture

In an organisation with a positive safety culture, the majority of the workers think and feel that health and safety is important. There is a strong policy and clear leadership from the top because senior management have this attitude, which runs through the whole organisation, from top to bottom. Managers think about the health and safety implications of their decisions and workers share the same view and work safely.

Everyone works safely because they want to. That is the way that things are done in their organisation and that is how everybody else behaves, too.

People in the organisation who do not share this view are in the minority and are likely to come round to the group way of thinking and acting. This is because the culture of an organisation tends to be absorbed by its workers over time. Workers who do not adjust to the group way of thinking may either leave, because they don't feel that they fit in, or possibly be dismissed for working unsafely.

In an organisation like this you can see that there is a clear link between safety culture and health and safety performance. People work safely, so there will be fewer accidents and less ill health. It is also easy to see why organisations strive to create a strong, positive safety culture because when there is one, it has a direct influence on worker behaviour.



A company with a positive safety culture - all members of staff appreciate the importance of safety

### Negative Culture

In an organisation with a negative safety culture, the majority of workers think and feel that health and safety is not important; they are poorly educated in health and safety and see it as unnecessary or unimportant. There is a lack of clear direction and leadership from senior management. Managers do not think about health and safety in their decision-making and so let other priorities dictate their actions. Workers behave unsafely, often because they do not know any better.

Safety-conscious workers are in the minority and are likely to come round to the group way of thinking and acting over time; if not, they may well leave because they do not like the organisational culture and feel unsafe in the work situation.

You can see that in an organisation like this there will be a lack of attention to health and safety, standards will be low, behaviour will be poor and accidents may occur as a result.



A workplace with a negative safety culture, resulting in unsafe behaviours

## INDICATORS USED TO ASSESS SAFETY CULTURE

It makes sense to try to assess an organisation's safety culture to see whether it is strong and positive, or if there is room for improvement. But the safety culture of an organisation is quite difficult to assess directly because there is no one single feature or item that can be measured. Safety culture is partly defined as how people think and feel, their attitudes, their beliefs and their priorities. These are intangible concepts and almost impossible to measure. So, rather than trying to assess the safety culture directly it is perhaps better to assess it indirectly by looking at the tangible outputs that can be used as indicators. There is no single indicator that can be used to assess safety culture; instead several indicators must be examined together.

# The Concept and Significance of Health and Safety Culture

## Accidents

Accident records can be used to work out how many accidents are happening as a rate (e.g. number of accidents per 100,000 hours worked - see later element). The accident rate for a particular organisation can be compared with the:

- **Organisation's performance in previous years** - this will indicate whether the accident rate is increasing or decreasing. A decreasing rate might be seen as an indicator of a positive safety culture.
- **Rate for other organisations that do the same work, or the industry average** (often published by the authorities). This is the process of benchmarking (see earlier). An accident rate that is higher than the national average might be seen as an indicator of a negative safety culture.

Looking at the standard of investigation that follows an accident and the effort that is put into preventing a recurrence is another way of using accidents as an indicator of safety culture. In an organisation:

- With a positive safety culture, much time and effort will go into investigating accidents, writing investigation reports and introducing follow-up action to prevent a recurrence.
- With a negative safety culture, superficial accident investigations are carried out, reports are of poor quality, and follow-up action is either not taken, or is ineffective.

## Absenteeism

A high level of worker absenteeism indicates that workers are either not able, or not willing, to come to work. If they are not able, this might indicate that they are suffering ill-health caused or worsened by work. If they are not willing, it indicates that they are withholding their labour for some reason. This is usually caused by poor workforce morale, which, in turn, can sometimes be linked to poor safety culture.

## GLOSSARY

### MORALE

The level of commitment, energy and enthusiasm that a workforce has for the work being done.

## Sickness Rates

A lot of ill-health is caused, or made worse, by work. For example, in many countries a huge number of working days are lost because of back pain, and a significant proportion of that back pain will have been caused or made worse by the work that individuals are doing. Sickness rates can be used in the same way that accident rates are, as an indicator of safety culture.

## Staff Turnover

An organisation with a positive safety culture is often a good place to work. Workers feel safe, morale is good, training is available, and workers are consulted about their working conditions. As a result, workers stay with their employer for longer, so low staff turnover may indicate a good safety culture, while high staff turnover may indicate the opposite.

## Compliance with Safety Rules

In an organisation with a positive safety culture the majority of workers want to work safely, so they comply with the safety rules and procedures laid down by the organisation. Formal or informal safety inspections or audits usually find that there is a high level of compliance. The safety culture has influenced workers' behaviour in a positive way.

Where there is a negative safety culture the reverse is usually true. Workers do not follow the rules, either because they do not know what they are (perhaps owing to poor training) or because they know the rules but do not want to follow them (perhaps because of poor attitude). Workers are free to break the rules because of poor supervision; they know that they will not be punished.

## Complaints About Working Conditions

There is an obvious link between safety culture and the number and type of complaints made by workers (and workers' safety representatives) to management. An organisation with a positive culture may actively encourage complaints, but few serious ones will be made. An organisation with a negative safety culture may actively discourage workers from complaining, and many of the complaints made will be legitimate and serious ones.

## MORE...

<http://www.ilo.org/safework/info/standards-and-instruments>



## THE INFLUENCE OF PEERS

When people are put together into groups they interact. Some individuals will have a lot of influence over the group; others will have little influence. In this way a "hierarchy" develops within the group. Certain ways of behaving will become the "norm", which will often be established by the more influential members of the group. A person wishing to become a member of the group will have to comply with the group norms. This pressure to comply with group norms is "peer group pressure".

Peer group pressure is an important factor to take into account when thinking about safety-related behaviour. If a group is already working safely then peer group pressure will keep most people in that group in line. But if the group is working unsafely then peer group pressure will tend to force more and more workers to behave unsafely in an attempt to fit in with group norms. Even though workers may know that what they are doing is wrong and may want to do it the right way, the pressure to comply with their social group overcomes their personal apprehensions.

The way to deal with this problem is usually to tackle the influential people within the group, who are the ones responsible for establishing group behaviour. If their behaviour can be changed then everyone else's will change as well. This might be done by training, education, involvement in safety-related projects, etc. One very successful tactic is to give them increased responsibility. Ultimately, if the influential members will not change their behaviour then they may have to be moved into other work groups where they may have less influence, or they may have to be disciplined using the normal disciplinary process.

### REVISION QUESTIONS

6. Define health and safety culture.
7. How do an individual's peers exert influence over his/her behaviour?

(Suggested Answers are at the end.)

# Factors Influencing Safety-Related Behaviour

## KEY INFORMATION

- Of critical importance to health and safety management is individual worker behaviour. One worker may behave in an ideal manner, but another may not and this unsafe behaviour may endanger themselves and others.
- Three significant factors influence a worker's behaviour:
  - The individual - their personal characteristics.
  - The job - the task that they are carrying out.
  - The organisation - characteristics of the organisation that they are working for.
- Key characteristics of an individual worker's personality that influence their safety-related behaviour include:
  - Attitude - how they think about a particular safety issue.
  - Competence - a combination of knowledge, ability, training and experience.
  - Motivation - the incentives at work.
- Individual workers may perceive the hazards and risks present in their workplace in different ways and this can influence their behaviour.

One issue of critical importance to health and safety management is the way that individual workers behave. It is estimated that well over half of all workplace accidents are caused by unsafe acts - the poor safety-related behaviour of a worker. It is not enough to dismiss this as being due to carelessness; this simply blames the worker and is ineffective at identifying underlying causes or corrective actions. Instead, we must look at how "human factors" influence working practices. We have to understand why people behave the way they do at work. If we can understand that, then it may be possible to:

- Correct poor behaviour when it is identified, by removing the cause of that behaviour.
- Anticipate poor behaviour before it occurs and introduce changes to reduce the likelihood of it occurring.

## ORGANISATIONAL, JOB AND INDIVIDUAL FACTORS

Why is it that one worker behaves safely at work, but another does not, even though working conditions for both workers are the same?

Why is it that a worker may behave safely doing one job, but then unsafe practices start to creep into their behaviour when they are switched to another job?

Why is it that a worker behaves poorly when working for one organisation, but then leaves and starts to work for another company and behaves in an entirely different manner?

The answer to these three questions (and the link between them) is "human factors". This phrase refers to a range of issues that influence a person's safety-related behaviour when they are at work.

These issues can be grouped under three main headings:

- Organisational factors - characteristics of the organisation that they are working for.
- Job factors - characteristics of the job or task that they are performing.
- Individual factors - characteristics of the individual.



Factors that Influence Behaviour



## Organisational Factors

These are the characteristics of the organisation that influence workers' behaviour:

- **Safety culture of the organisation** - the way that this culture is gradually absorbed by the individual (as already discussed).
- **Policies and procedures** - the existence and quality of these and the way that they might encourage or discourage good safety-related behaviour. For example, in an organisation where staff have to spend a lot of time driving, very clear and well thought-through policies on the in-car use of mobile phones are necessary.
- **Commitment and leadership from management** - whether this is visibly demonstrated outside the boardroom (since behaviour in the boardroom is not witnessed by most of the workers in an organisation).
- **Levels of supervision** - the presence or absence of, and the competence of, supervision (in the context of health and safety) and the way that poor safety-related behaviour is dealt with. For example, in an organisation that undertakes engineering maintenance work, the presence of competent supervisors to oversee that work is critical as a check to prevent both rule-breaking behaviour and human error.
- **Peer-group pressure** - the extent to which this is allowed to drive unsafe behaviours (as discussed).
- **Consultation and worker involvement** - the extent to which workers are involved in the management of health and safety issues and in the decision-making process.
- **Communication** - how effective the organisation is at using various communication methods to convey health and safety messages and information to the workforce, and how well the organisation then checks understanding of those messages.
- **Resources** - the availability of any necessary equipment (machine guards, personal protective equipment, etc.) and the allocation of time to provide training in health and safety.
- **Training** - how good the organisation is at identifying health and safety training needs and opportunities, and how well it then meets those needs to create well-informed, competent staff.
- **Work patterns** such as shift systems, work at night, or extended hours - these can adversely affect workers' health, and cause fatigue, which can lead to poor performance on tasks that require attention, and increase the risks associated with safety-critical work.

## Job Factors

These are the various characteristics of a worker's job that influence their safety-related behaviour, and may involve:

- **Task** - the characteristics of the work itself, in particular the ergonomic requirements. For example, if a worker needs to bend or stoop over when carrying out a task then that task needs to be adapted to best suit the worker concerned. In the absence of ergonomic design, workers will find the most comfortable way of working and this may not be the safest way.
- **Workload** - the amount of work, rate of work, deadlines and variety of work that individuals have to cope with, and the degree to which these are under the direct control of the worker or imposed externally.
- **Environment** - the workplace conditions such as space, lighting, noise, temperature and humidity and the way that these parameters are controlled so as to minimise their impact on worker performance. For example, workers in a steel foundry may have to undertake physical labour in a high-temperature environment, so there is the potential for dehydration, heat stress and heat stroke. Workers may find ways of working that are not necessarily safe, in order to minimise physical exertion. They may also start to suffer degradation in physical and mental performance as a result of heat stress.
- **Displays and controls** - the design of these, and the way that poorly designed displays and controls can contribute to the likelihood of human error; e.g. displays that are difficult to view and critical displays that are out of the operator's normal field of view.
- **Procedures** - the existence and quality of working procedures. A lack of written procedures or poorly written procedures that are out of date, overly complex or impractical can be why workers do not comply. To be effective, procedures should be accurate, concise, use familiar language and they must be do-able.

## GLOSSARY

### ERGONOMICS

The study of the relationship between the worker, the work that they are doing, and the environment in which they are doing it.

# Factors Influencing Safety-Related Behaviour

## Individual Factors

People bring to their job their own personal mix of skills, knowledge, experience, attitudes, motivations, habits and personality. These individual characteristics influence behaviour in complex and significant ways. Some of these characteristics cannot be changed, but others can. It is important to recognise where changes to these characteristics might be needed and what methods might best be used to make those changes. For example, if workers have a poor attitude to machine guards it will be necessary to change their attitude, and there are various ways of attempting to achieve this change. Attitude, competence, motivation and perception of risk are individual factors that we will now look at in greater detail.

## ATTITUDE, COMPETENCE AND MOTIVATION

These are three personality characteristics of an individual that may influence their safety-related behaviour.

### Attitude

An “attitude” is a person’s point of view or way of looking at something; how they think and feel about it.

For example, everyone has an attitude towards work; some people think of it in a positive way and others have a negative attitude. Attitudes develop over time, many of them quite early in life, and they have a tendency to stay with us. This is because they are a part of self-image - the mental picture a person has of themselves and who they are. Attitudes do change but normally only slowly.

In the context of workplace behaviour, attitudes are important because a worker’s attitude will make them more or less likely to behave safely. If a worker’s attitude to a machine guard is that the guard is great, because it is there to stop their arm being cut off, then that worker is very unlikely to remove the guard in any circumstances. But if the worker’s attitude is that the guard is unnecessary, over-the-top, put there to tick a box or to make the job harder, then that worker is likely to remove the machine guard at the earliest opportunity.

Obviously, the first attitude is the one to be encouraged and the second one needs to be changed. Changing attitudes is notoriously difficult but can be done using various methods, such as:

- **Education and training** - workers educated in the hazards and risks associated with the machine and the reasons why a guard is necessary may change their attitude over time.
- **High-impact interventions** - workers put through high-impact training, where they are shown pictures of the injuries caused by failure to use the guard, may change their attitude very quickly.
- **Enforcement** - workers forced to use the guard, by supervision and discipline, will find that using it becomes a habit. After a time attitudes change to match behaviour.
- **Consultation and involvement in the decision-making process** - workers consulted and involved in the selection, design and implementation of the guard will feel more ownership of the process and are more likely to develop a positive attitude towards guard use.

### Competence

Competence is a combination of knowledge, experience, training and ability that brings a person to a level where they are able to perform to an acceptable standard and they are aware of their own limitations.

Employers must ensure that workers are competent for the role that they carry out. To be competent a worker must have the right combination of training and experience - simply having a qualification doesn’t necessarily make a person “competent”. Carrying out the job for a long time doesn’t, either! A newly qualified person may perform tasks more carefully than a more experienced worker, or be more up to date with current technology, but they may also lack the experience that only comes with time.

## Motivation

In the context of health and safety, it is important to understand a worker's motivation for carrying out their work in a safe or unsafe way because that motivation can then be changed. Workers often behave unsafely not simply because they are wilful but because they perceive a reward and they think that the risk is worth the reward. Their unsafe behaviour is **incentivised**.

For example, a worker who can make more money by taking an unsafe shortcut is far more likely to take that shortcut if they think they can get away with it. Similarly, a worker who can save themselves time and energy by taking a shortcut is far more likely to do likewise. If, however, there is no reward, or if the worker thinks that the risk is too great, then they will not take the shortcut.

Any reward scheme in the workplace that is intended to improve safety must be carefully thought through to ensure that it will incentivise the right kind of behaviour. For example, some workplaces pay a bonus related to the number of accidents recorded over a period of time. Fewer accidents = bigger bonus. This sounds like a good idea because it should make people work more safely so that they have fewer accidents and so get a bigger bonus. But, of course, no one goes to work intending to have an accident. People do not take more care. Instead, what happens is that they report fewer of the accidents that they are having at work so that the number looks better. The incentive scheme actually rewards under-reporting of accidents, not safer behaviour.

## GLOSSARY

### MOTIVATION

A person's drive towards a goal. The thing that is making them do what they do.

## PERCEPTION OF RISK

Perception can be defined as the way in which a person interprets information detected by their senses.

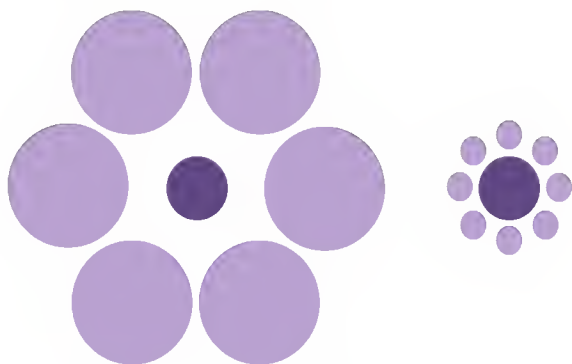
Some hazards in the workplace cannot be detected by human senses (e.g. carbon monoxide gas is colourless, odourless and tasteless yet deadly at relatively low concentrations) so the risk associated with these hazards will not be perceived.

People with some form of sensory impairment may not be able to correctly detect hazards in a workplace. For example, a partially-sighted person may not be able to see trip hazards on the floor, so they are at greater risk from these hazards than their sighted colleagues. A colour-blind worker may not be able to differentiate correctly between red and green and this may create risk to themselves and others. That is why some jobs require an eye test, and colour blindness would prevent recruitment (e.g. airline pilots). Both of these examples deal with a defective sense (eyesight). Any form of sensory impairment, whether it is sight, hearing, smell, touch or even taste, may mean that a person is unable to correctly perceive the world around them. This might have health and safety implications. Sensory impairment can also result from workplace controls that affect the senses, e.g. personal protective equipment (PPE) such as hearing protection reduces sharpness of hearing, gloves reduce sensitivity, etc. Loud noise in the workplace also reduces a person's ability to hear properly.

However, perception goes beyond this simple "sensory impairment" issue to also cover the way in which a person's brain interprets the information sent to it by the senses. A person with fully functioning senses can still make errors in the way they interpret sensory information.

# Factors Influencing Safety-Related Behaviour

Optical illusions work using this principle:



Interpretation of Information: Optical Illusion

Which centre dot is larger? They are, in fact, the same size.

Your eyes may work, but the brain interprets incorrectly.

A tired worker driving a lorry may not recognise a pothole in the road quickly enough to avoid it, despite the fact that their eyes work perfectly well. It is not their eyes that have failed them, it is the way their brain has interpreted the information sent by their eyes. Other factors that can distort a person's perception of hazard and risk include:

- Illness.
- Stress.
- Fatigue.
- Drugs and alcohol.
- Previous experiences.
- Training and education.

## TOPIC FOCUS

### Ways of Improving Worker Perception of Hazards

Use surveys or discussion groups to establish why workers don't appreciate the presence of a particular hazard then set about dealing with the issues by, for example:

- Carrying out safety awareness campaigns using posters, toolbox talks, etc.
- Developing training programmes to increase awareness of the hazard and its consequences.
- Highlighting hazards, e.g. using safety signs to inform employees that hearing protection is required, or to warn of a hazard, such as the presence of forklift trucks or wet floors. Paint and tape can also be used to highlight hazards like low objects or changes in level (e.g. the edge of steps).
- Ensuring that there is adequate lighting.
- Removing distractions such as noise (which could result in a worker not hearing a warning) or excessive heat (which can cause fatigue).

## MORE...

<http://www.hse.gov.uk/humanfactors/index.htm>

Reducing Error and Influencing Behaviour (HSG48) available from the HSE website.

## REVISION QUESTION

8. What is perceptual distortion and how may it arise?

(Suggested Answer is at the end.)



# Improving Health and Safety Behaviour

## KEY INFORMATION

- The safety culture of an organisation can only be improved if a clear commitment has been made by management, with visible leadership.
- Competent staff have the appropriate training, knowledge, experience and other skills necessary to do their jobs safely.
- Communication of safety information can be verbal, written or graphic and there are strengths and weaknesses associated with each method.
- Notice boards, posters, toolbox talks, memos and handbooks all have a part to play in delivering safety information to employees.
- Training is a vital tool in improving safety-related behaviour and there are various occasions when training should be provided.

## MANAGEMENT COMMITMENT AND LEADERSHIP

Management commitment starts at the very top of the organisation. Senior managers must provide the leadership necessary to inspire and motivate managers at all levels to pursue health and safety objectives rigorously. This is done by establishing the organisation's safety policy with clear priorities and targets to be achieved.

It is also critical that middle and junior management follow through the commitment of senior management via the priorities and objectives that they set their staff. In this way commitment is cascaded down through the organisation.

An important factor in demonstrating management commitment is visible leadership. If management are never seen taking an active interest in safety issues, then there will be an assumption that they are not interested. Individual managers must show their commitment to health and safety to their staff as this creates the local safety culture.

Visible commitment can be demonstrated by:

- Behaving safely.
- Involvement in the day-to-day management of health and safety, e.g. by attending safety meetings.
- Taking part in safety tours or audits.
- Promoting changes to improve health and safety.
- Enforcing the company safety rules.

### Disciplinary Procedures

Occasionally, it may be necessary to use disciplinary procedures to enforce the health and safety rules, e.g. in the event that an employee endangers their safety or the safety of others. In these circumstances the employer would be negligent in ignoring such behaviour and must act to ensure that it is not repeated.

Which of these situations might result in disciplinary action?

- A supervisor fails to follow a procedure and instructs their shift to cut corners in order to save time.
- A worker drives a forklift truck recklessly and collides with racking, causing damage.
- A supervisor fails to isolate a machine before working on it (against their training), as the job was only of short duration.
- A worker climbs over a locked machine guard to carry out a quality check.
- An office employee repeatedly enters the factory area without the required PPE despite being told several times of the requirements.

The answer is clearly that these could *all* potentially result in disciplinary action, though the level of action would depend upon each individual situation. It is common for minor breaches of health and safety procedures to be dealt with informally through discussions and coaching.

## COMPETENT STAFF

A competent person is a person who has sufficient training, knowledge, experience and other abilities or skills to be able to carry out their work safely and without risk to health.

It is the responsibility of the employer to ensure that workers are competent to carry out the tasks that they have been allocated. The more competent the worker, the better able they will be to do their job safely. This has a positive influence on safety culture. In order to determine competence the employer may check qualifications, request references, or verify membership of professional bodies.

# Improving Health and Safety Behaviour

Managers should also be competent. This means that all managers should have an understanding of the health and safety implications of the decisions they make on a day-to-day basis. This is often overlooked. The point here is that if a manager is in control of a warehouse then they must understand the difference between safe and unsafe forklift-truck driving. They do not need to be able to drive a forklift truck themselves, but they must have sufficient knowledge to spot good and poor behaviour when they see it.

## EFFECTIVE COMMUNICATION

Communication can be defined as the process of delivering information from a sender to a recipient.

To be truly effective the correct information has to be transmitted, received and understood.

There are three principal delivery media for communicating information: verbal, written and graphic.

### Verbal Communication

Communication using the spoken word, e.g. face-to-face conversations, meetings, interviews, training sessions, by telephone or over a public announcement (PA) system.

This is the easiest and most commonly used form of communication but there are various weaknesses associated with this method. If verbal communication is to be used to convey safety-critical information to workers these weaknesses must be overcome.

Limitations	Merits
Language barrier may exist.	Personal.
Jargon may not be understood.	Quick.
Strong accent or dialect may interfere.	Direct.
Background noise may interfere.	Allows for checking of understanding.
Recipient may have poor hearing.	Allows for feedback to be given.
Message may be ambiguous.	Allows for exchange of views.
Recipient may miss information.	Usually allows for additional information to be transmitted by means of tone of voice, facial expression and body language.
Recipient may forget information.	
No written record as proof.	
Poor transmission quality if by telephone or PA system.	

Limitations and merits of verbal communication

### Written Communication

Communication using the written word, e.g. report, memo, e-mail, notice, company handbook, policy document, operating instructions, risk assessment, minutes of meetings, etc.

Limitations	Merits
Indirect.	Permanent record.
Takes time to write.	Can be referred back to.
May contain jargon and abbreviations.	Can be written very carefully to avoid use of jargon, abbreviations and ambiguity.
Can be impersonal.	Can be distributed to a wide audience relatively cheaply.
Message may be ambiguous.	
Message may not be read by recipient.	
Language barrier may exist.	
Recipient may not be able to read.	
Immediate feedback is not available.	
Questions cannot be asked.	
Recipient may have impaired vision.	

Limitations and merits of written communication

### Graphic Communication

Communication using pictures, symbols or pictograms, e.g. safety signs, such as a fire exit sign, hazard warning symbols such as a skull and crossbones found on the label of a toxic chemical, or photographs, such as of a machine showing a guard being used correctly in the operating instructions for the machine.

Limitations	Merits
Can only convey simple messages.	Eye-catching.
Expensive to buy or produce.	Visual.
May be ignored.	Quick to interpret.
Symbols or pictograms may be unknown to the recipient.	No language barrier.
No immediate feedback available.	Jargon-free.
Questions cannot be asked.	Conveys a message to a wide audience.
Recipient may have impaired vision.	

Limitations and merits of graphic communication



## Broadcasting Methods

There are various ways of broadcasting health and safety information using the three media we discussed above. Each of these broadcasting techniques has its own strengths and limitations and so usually a mix of some or all of these techniques is used to ensure that essential messages are transmitted and correctly understood by all staff.

- **Notice boards** - should be “eye-catching” and located in areas used by all workers, e.g. rest rooms or central corridors. Notices should be current, relevant and tidily displayed. Cluttered, out-of-date, irrelevant notices obscure the messages being conveyed. Displaying a notice does not mean that it will be read. Typical contents might include: the safety policy; employers’ liability insurance certificate; emergency procedures; identity of safety representatives and first-aiders; minutes of safety committee meetings; accident statistics, etc.
- **Posters and videos** - used to provide safety information, drawing attention to particular issues and supporting the safety culture.

Advantages of Posters	Disadvantages of Posters
Graphic and therefore avoid language barriers. Can be eye-catching and generate interest. Low cost. Can reinforce key messages.	Can quickly become part of the surroundings. May be defaced. Can trivialise important issues. Rely on the recipient interpreting the correct message from the image

Films or videos are mainly used in training programmes and, if well-made, can hold the audience’s attention.

- **Toolbox talks** - short, practical safety briefings carried out routinely in the workplace, often presented by the supervisor at the start of a shift. They can be useful for generating awareness and discussion on safety precautions, but may be seen as dull or a waste of time if topics are irrelevant or poorly presented.
- **Memos and e-mails** - written notifications used to provide specific information about a single issue, such as updating procedures, drawing attention to lapses in practice, etc. When using memos there is no opportunity for feedback or questioning, so their use is really limited to issuing clear and precise instructions or information.
- **Worker handbooks** - used to set out the organisation’s health and safety policy. All employees should be given a copy on joining the organisation, and updates are usually circulated to inform staff of changes. This is a key document, containing such information as site rules, reporting procedures, emergency arrangements, etc. It is standard practice to issue this handbook as part of the worker’s induction and to get a receipt as proof of issue.

## Co-operation and Consultation

A positive safety culture can only be created in an organisation with worker co-operation and involvement. If workers feel that they are being dictated to then they will feel little ownership of health and safety. Indeed, they may come to resent instructions being imposed from above and start to actively oppose safety initiatives and improvements. This creates a negative culture. The most effective way to avoid this negativity and to actively encourage worker interest and ownership is to involve workers in the decision-making process, which is best achieved through worker consultation.

In many countries there is a legal duty placed upon employers to consult with their employees on health and safety matters. Article 20 of ILO-C155 and Article 12 of ILO-R164 give specific standards on this. Even where there is no legal requirement, it is recognised as good practice for the employer to consult with his employees on health and safety matters.

An employer does not have to consult with employees on everything, but particular health and safety issues where consultation would be appropriate include:

- The introduction of measures affecting the health and safety of the workers.
- The appointment of safety advisors and specialists.
- Health and safety training plans.
- The introduction of new technology into the workplace that will affect health and safety.

## GLOSSARY

### CONSULTING AND INFORMING

**Consulting** - the two-way exchange of information and opinion between the employer and workers so that the best course of action can be agreed upon. This implies that the employer listens to the concerns of his workers and changes his plans as necessary. True consultation therefore provides an opportunity for workers to feed back to management on their feelings and opinions on health and safety matters.

**Informing** - providing information to workers in a form that they can understand and then checking that the information has been understood. The information flow is one-way and the employer does not have to take any notice of feedback.

# Improving Health and Safety Behaviour

The two methods employers normally use to consult workers are:

- **Direct consultation** - the employer talks directly to each worker and resolves issues as they occur. This works well in very small organisations but is ineffective in larger workplaces.
- **Worker representatives** - a Health and Safety Committee is established, made up of key management personnel and workers' representatives. This committee meets regularly to discuss health and safety matters and resolve issues. Worker representatives may even have specific additional rights under local law, such as time off with pay for training.

## TRAINING

Training (in the context of health and safety) can be considered as the planned, formal process of acquiring and practising knowledge and skills in a relatively safe environment.

### The Effect of Training

Training is central to the management of health and safety in workplaces. Employers have a responsibility to train their staff to carry out their jobs in a safe manner. Training is a key component of competence. In the absence of training it is difficult to develop or demonstrate competence and, as a result, statute law in many countries requires employers to provide appropriate training for their workers.

The reason for this requirement is simple: training has a dramatic effect on safety-related behaviour. Without training, workers try to do their jobs to the best of their ability but they do so either by informally copying others (including copying all the bad habits and unsafe working practices that they see) or by doing the job the way that they think is best. Once the worker has been properly trained they will understand:

- The hazards and risks inherent in their work.
- The correct rules and precautions to apply.
- Foreseeable emergencies and the actions to take, should these events occur.
- Limitations and restrictions that apply to their work.

## TOPIC FOCUS

Typical content of a **general induction training course** for new starters:

- The organisation's health and safety policy.
- Fire and other emergency procedures.
- First-aid facilities and personnel.
- The location of welfare facilities.
- Safe movement around the workplace.
- Accident and incident reporting procedures.
- Worker consultation arrangements.
- General safety rules, such as no smoking areas.
- Personal protective equipment requirements.
- Introduction to the safe systems of work and permit systems.
- Introduction to the risk assessment system.

## Training Opportunities

Various circumstances require the provision of training:

- **New employees - induction training** takes place when workers join an organisation. This allows the worker to obtain knowledge about the organisation in a safe, structured manner and ensures that critical information is delivered and understood. Since a worker is at risk in a workplace from their first day of work it makes sense to deliver induction training as soon as they start work and to cover safety-critical information first.
- **Job change** - additional training is necessary when a worker's job changes in such a way that they are exposed to new hazards and risks. For example, a health-care worker whose job changes from being hospital-based to delivery of care in clients' own homes will need additional training, not in how to deliver care, since the service they provide has not changed, but in lone working. They will be at far greater risk when they go out into the community to conduct home visits as opposed to working in the hospital.
- **Process change** - when the way in which the work is done changes, workers may be exposed to new hazards and risks that require additional training - for example, when a different product is being produced on an existing piece of machinery this may create new risks that require training in new safe operating procedures.

- **New technology** - new technologies adopted by organisations create different hazards and risks that workers may be unfamiliar with. The mass introduction of desktop computers, screens and keyboards is an example of new technology introducing new risk into workplaces. Training on the hazards associated with the use of this display screen equipment (DSE) and the correct layout and use of the DSE workstation is now standard practice in many workplaces.
- **New legislation** - changes to the law governing a particular health and safety issue often create a need to train workers on the implications of the new legislation, perhaps because working practices have to change or simply to ensure an understanding of the law and its requirements.

### Training Needs Analysis

Training should be carefully planned to avoid unnecessary expense and disruption and to focus resources where they are most needed.

In order to develop a training programme, the organisation should carry out an analysis of what is required. Factors to be considered include:

- Type and function of the organisation.
- Hazard and risk profile of the organisation, e.g. if woodworking machinery is used, training in its safe use should be provided.
- Accident history of the organisation, which may indicate areas where awareness is lacking, or training is needed.
- Any statutory training requirements, e.g. for first-aiders.
- Level of training previously provided, together with the details of which employees have been trained and when.

Once this information is available, a gap analysis will establish the content and level of additional training required, together with the most appropriate format for training, e.g. toolbox talks may be more effective than classroom training in some circumstances. Finally, the organisation must consider the resources available and determine whether the training will be delivered in-house or whether external providers are needed.

## GLOSSARY

### GAP ANALYSIS

A technique in which the current situation is compared with the desired or "target" situation.

## MORE...

<http://www.hse.gov.uk/pubns/indg277.pdf>

## Training Records

It is important to keep records of any training given, not only to record who has been trained but also to update and show progress against the training plan. Training records should detail the level of competence achieved, the date of the training and highlight when any refresher training is required. These records may be used to demonstrate to regulators that adequate training was provided, or to prove in a civil claim or an accident investigation that an employee had received training.

## Evaluating Training Effectiveness

The evaluation of the effectiveness of training can be carried out in various ways. Initially, trainees and trainers may complete post-training evaluation forms, which give an indication of how well the course went. Once the trainees have returned to work success indicators vary according to the training provided, but may include:

- Reduction in accident and absence rates.
- Increased awareness of the topic covered, e.g. an increased number of worker comments/concerns highlighted.
- Improved compliance with safe systems of work.

## REVISION QUESTIONS

9. Is feedback essential for effective communication?
10. What are the main advantages and disadvantages of both written and oral forms of communication?
11. How are graphical (picture) symbols used in safety communications?
12. What should be the first priority in induction training?
13. Apart from at induction, when should training be provided?

(Suggested Answers are at the end.)

# Emergency Procedures

## KEY INFORMATION

- An organisation should develop emergency procedures to deal with foreseeable incidents such as fire, bomb threat and chemical spill.
- These procedures should cover the internal arrangements for dealing with the foreseeable incidents, which will include:
  - Procedures to follow.
  - Provision of suitable equipment.
  - Nomination of responsible staff.
  - Provision of training and information.
  - Drills and exercises.
  - Contacting the emergency services.

## TOPIC FOCUS

An organisation has to develop procedures to deal with foreseeable incidents. Such incidents might include:

- Fire.
- Bomb threat.
- Spillage of a hazardous chemical.
- Release of a toxic gas.
- Outbreak of disease.
- Severe weather or flooding.
- Multiple casualty accident.

The foreseeable incidents will vary depending on many factors such as the type of organisation and its location.

## IMPORTANCE OF DEVELOPING EMERGENCY PROCEDURES

Despite all the controls that can be introduced into an organisation, things can still go wrong. Accidents and incidents do happen. When they do it is critical that the organisation has emergency procedures that can be brought into effect without delay, otherwise there may be a poor or inappropriate response that makes things worse, rather than better.

Having identified the foreseeable incidents, the organisation should make internal arrangements to deal with each of them, should they occur. These arrangements should include:

- **Procedures to be followed:** in the event of a fire, for example, normal practice is for workers to exit the building using the signed escape routes and assemble at a designated place. In the event of a bomb threat the procedure is often the exact opposite: to go to a room inside the building, away from windows and external walls.
- **Provision of suitable equipment:** if there is a chemical spill, for example, absorbent granules or booms might be used to contain the spill and PPE used to prevent harm to those involved in the containment operation. In the event of a release of toxic gas, respiratory protective equipment may be needed.
- **Nomination of responsible staff:** in a fire situation there is likely to be a need for fire wardens or marshals, who walk through the building to check that everyone is aware of the fire evacuation. A fire team may also be required, whose job will be to check the area where the fire is suspected to be.



- **Provision of training and information:** workers will only know what to do when these various emergencies occur if they have been provided with information and training. Any nominated individuals will require additional training in their roles in the emergency, and in the safe handling of any equipment (e.g. PPE) that they might have to use. Members of the public may require information on emergency procedures, which might be provided in the form of notices, or by means of public address system announcements.
- **Drills and exercises:** emergency procedures should be practised to ensure that people are familiar with the actions they might be expected to take. In this way people's responses become automatic. For example, fire evacuation drills should be conducted routinely in all workplaces, and multiple casualty accident exercises should be practised if they are a foreseeable event.

## ARRANGEMENTS FOR CONTACTING EMERGENCY SERVICES

While internal emergency arrangements must be made by the organisation to deal with foreseeable incidents, these responses will normally also involve contacting external emergency services for help.

There should therefore be appropriate arrangements in place:

- Communication equipment, e.g. land-line and mobile phones, satellite phones, or VHF radio. The more remote the location, the more difficult communication becomes.
- Contact details, e.g. national and local emergency-service numbers. This may involve international medical evacuation as well.
- Responsible individuals with the necessary information and knowledge nominated to make the call. In many instances the emergency services can provide a more effective response if they are given critical information quickly.

### REVISION QUESTIONS

14. What is the main objective of an emergency procedure?
15. Name three typical emergencies that may require the development of emergency procedures.

(Suggested Answers are at the end.)



## KEY INFORMATION

- An employer must provide appropriate first-aid services for his employees. This will include first-aid equipment and appropriately trained personnel.
- To determine what needs to be provided, an employer will have to undertake an assessment, which should consider various factors, such as the hazards and risks inherent in the work, the number and work pattern of workers, and the geographic location and spread of the workplace.

## FIRST-AID REQUIREMENTS

An employer has a duty to provide appropriate first-aid services for his employees. This is to allow an immediate emergency medical response to foreseeable injuries that might occur in the workplace. Three elements must be provided:

- **Facilities** - an appropriate location where first-aid treatment can be given.
- **Equipment** - suitably stocked first-aid kits and other equipment as necessary.
- **Personnel** - staff with appropriate training to deliver first-aid treatment.

The employer must notify staff of these first-aid arrangements and, in particular, the identity of trained first-aid personnel.

## ROLE, TRAINING AND NUMBER OF FIRST-AIDERS AND APPOINTED PERSONS

The basic role of first-aiders is to keep the injured casualty alive until professional medical assistance can take over. This is sometimes referred to as the three Ps:

- Preserve life.
- Prevent deterioration.
- Promote recovery.

First-aiders also provide simple treatment for minor injuries that do not require professional treatment.

There are commonly two different levels of first-aid training in the workplace. The minimum provision would be a person available to take charge in an emergency situation and call the emergency services. This “appointed person” might need to be trained in basic emergency aid and in how to contact the relevant services.

In most workplaces a number of personnel should also be trained to a higher standard so that they can be considered as “first-aiders”. The number of trained first-aiders provided will depend on various factors, and the exact nature of their training will normally be determined by local legislation. Refresher training is usually mandatory for first-aiders because their skills fade over time through lack of practice.

When determining the number of first-aiders to provide in the workplace the employer would need to consider the:

- Number of workers on site.
- Distribution of workers (e.g. are there more in one area, or at a certain time of day?)
- Shift patterns - adequate cover must be provided for all shifts, including weekend and nightshift operations.
- Need to provide first-aid cover during absences, e.g. for holidays or during illness.

## REQUIREMENTS FOR FIRST-AID BOXES AND FACILITIES

Suitable facilities should be provided where first-aid treatment can be given. As a minimum this might consist of a room that is used for other purposes but can be quickly converted into a treatment area. In a larger workplace a dedicated treatment room should be provided.

This room should be:

- Centrally located in an area that can be accessed by the emergency services.
- Clean and adequately heated, ventilated and lit.
- Provided with hand-wash facilities, a chair and a clinical waste bin, etc.

### First-Aid Equipment

As a minimum, one fully stocked first-aid kit might be provided for a small, low-risk workplace. In larger workplaces multiple first-aid kits should be positioned at various locations in the workplace, as well as:

- Eye-wash stations.
- Emergency showers.
- Blankets.
- Splints.
- Resuscitation equipment.
- Stretchers.
- Wheelchairs.
- Other equipment, as required.



Eye-wash station

## TOPIC FOCUS

Factors to consider when deciding first-aid provision:

- General risk level of the workplace.
- Hazards present in the workplace.
- Accident history.
- Specific procedures required, e.g. some toxic materials have specific antidotes or first-aid protocols.
- Presence of vulnerable persons.
- Number of workers in the workplace.
- Work patterns and shift systems of workers.
- Geographic location of the workplace.
- Spread of the workplace.

## FIRST-AID COVERAGE

The geographic location is an important issue to consider when determining first-aid provision. Workplaces within easy reach of the emergency services can perhaps provide minimal cover, but workplaces in remote locations, which the emergency services may take hours to reach, must have more facilities and skilled personnel available.

## MORE...

<http://www.hse.gov.uk/firstaid/first-aid-training.htm>

## REVISION QUESTION

16. What factors might need to be considered when determining the first-aid facilities for a workplace?

(Suggested Answers are at the end.)

## SUMMARY

This element has dealt with certain topics relating to the Organising section of a health and safety management system. In particular this element has:

- Looked at the various parties within a workplace and the responsibilities that they have:
  - The employer - for ensuring that the workplace is safe and free of health risk.
  - Senior management - for setting policy, allocating resources and showing leadership.
  - Middle management - for making standards happen operationally.
  - Safety specialists - for giving correct advice and guidance.
  - Workers - for their own safety and the safety of others.
- Looked at other parties outside the workplace and the responsibilities that they have:
  - Controllers of premises - for ensuring that the premises they control are safe.
  - The self-employed - for their own safety and the safety of others.
  - The supply chain - for the safety of plant, equipment and substances that they supply for use at work.
  - Joint occupiers of premises - for co-operation and co-ordination.
- Considered the responsibility that a client has for the management of contractors and outlined the steps that a client should take to choose a competent contractor and plan and monitor their work.
- Defined safety culture (as the shared attitudes, values, beliefs and behaviours relating to health and safety) and made a link between safety culture and health and safety performance.
- Outlined how safety culture might be assessed by looking at indicators such as accidents, ill-health, compliance and complaints.
- Discussed the three human factors that influence a worker's behaviour: individual, job and organisational factors.
- Outlined the influence of a worker's attitude, competence and motivation on their safety-related behaviour, and considered the importance of perception.
- Looked in detail at some of the issues that must be dealt with in order to improve safety culture:
  - Clear management commitment with visible leadership and appropriate disciplinary measures.
  - Competent staff (training, knowledge, experience and skills).
  - Communication of safety information in verbal, written or graphic form through the use of notice boards, posters, etc.
  - Consultation.
  - Training at appropriate times, e.g. induction training for new staff.
- Discussed why an organisation must develop emergency procedures to deal with foreseeable incidents, the internal arrangements that might be made, and the arrangements for contacting the emergency services.
- Outlined the need for an employer to provide appropriate first-aid services for employees, to include first-aid facilities, equipment and appropriately trained personnel.
- Considered the factors that must be assessed when deciding on adequate first-aid provision.



## QUESTION

- (a) **Give** the meaning of the term 'perception'. (2)
- (b) **Outline** ways in which workers' perceptions of hazards in the workplace might be improved. (6)

### APPROACHING THE QUESTION

Think now about the steps you would take to answer the question:

1. The first step is to read the question carefully. This time you have been asked to "give" the meaning in part (a) - NEBOSH define this as "provide without explanation". Part (b) is another "outline", so more detail is required here, and perhaps an example or two to illustrate your points.
2. Next, consider the marks available. As always for this type of question there are eight marks available, split here as two for part (a) and six for part (b). So, for part (b) you are probably looking to provide six pieces of information, expressed as an outline.
3. Now highlight the key words. In this case they might look like this:
  - (a) Give the meaning of the term 'perception'. (2)
  - (b) Outline ways in which workers' perceptions of hazards in the workplace might be improved. (6)

4. Read the question again to make sure you understand it and have a clear understanding of hazard perception. (Re-read your notes if you have to.)

5. The next stage is to develop a plan - you are now familiar with how to do this.

The answer plan will take the form of a bullet-pointed list that you need to develop into a full answer based on the key words that you have highlighted.

Now have a go at the question. Draw up an answer plan, and then use it as the basis to write out an answer as you would in the exam.

**Key hint:** when you are defining "perception" you might not have to think as a health and safety practitioner - what definition would the layman use? (Perception isn't just a health and safety term.)

When you have finished, compare your plan and full answer with those that follow.

# Exam Skills

## SUGGESTED ANSWER

Plan

Perception (Meaning)	Improving Hazard Perception
<ul style="list-style-type: none"><li>• The way that people see the world.</li><li>• The way that people interpret information that they take in through their senses (including sight, smell, hearing, etc.)</li></ul>	<ul style="list-style-type: none"><li>• Make people more aware of hazards through campaigns.</li><li>• Train people in hazard awareness.</li><li>• Make hazards more obvious.</li><li>• Remove distractions, such as noise.</li><li>• Consider that people may have sensory problems, such as sight or hearing impairment.</li><li>• Address issues that could affect senses, e.g. hearing protection muffles sound and affects hearing; safety glasses can impact peripheral vision.</li></ul>

Now have a go at the question yourself.



## POSSIBLE ANSWER BY EXAM CANDIDATE

- (a) Perception can be defined as the way people interpret information they take in through their senses, e.g. hearing and sight. Different people will perceive things in different ways.
- (b) To improve hazard perception a number of approaches can be used. Firstly, the hazards need to be apparent to the workers. This can be achieved by making them easy to identify, e.g. by using signs to warn of hot surfaces and painting trip hazards yellow. Hazards can also be made more obvious to workers through the use of training and awareness-raising sessions, e.g. to introduce the idea that noise can be harmful to hearing. Hazards may also not be noticed as the senses are overloaded with other information, e.g. a noisy workplace may prevent a worker hearing an approaching vehicle, so background noise levels may be reduced to address this. Finally, there may be issues affecting the way in which information is absorbed by different people - those with hearing or sight impairment may require additional steps to be taken to highlight hazards, e.g. tactile flooring near to crossing points, or vibrating pagers to warn of the fire alarm. PPE can also impair the senses - the use of hearing protection reduces the ability of the wearer to hear a warning.

## REASONS FOR POOR MARKS ACHIEVED BY CANDIDATES IN EXAM

- Many candidates will have lost marks for not providing the outlines required.
- Most candidates only considered training and awareness-raising and so would have limited their marks.



# HEALTH AND SAFETY MANAGEMENT SYSTEMS 3 – PLANNING

ELEMENT

4



## LEARNING OUTCOMES

On completion of this element, you should be able to demonstrate understanding of the content by applying what you have learnt to familiar and unfamiliar situations. In particular, you should be able to:

- 1 Explain the importance of planning in the context of health and safety management systems.  
.....
- 2 Explain the principles and practice of risk assessment.  
.....
- 3 Explain the general principles of control and a basic hierarchy of risk reduction measures.  
.....
- 4 Identify the key sources of health and safety information.  
.....
- 5 Explain what factors should be considered when developing and implementing a safe system of work for general activities.  
.....
- 6 Explain the role and function of a permit-to-work system.  
.....

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# Importance of Planning

## KEY INFORMATION

- Organisations must establish a system for the effective identification, implementation and maintenance of health and safety requirements.
- Organisational objectives should be SMART: specific, measurable, achievable, reasonable and time-bound.
- Planning requires that an organisation keeps up to date with legal requirements.

## THE MANAGEMENT SYSTEM

The third element in the ILO-OSH Safety and Health Management System is **Planning and Implementing**. Look back now at the diagram of the system in Element 2 to remind yourself of the key elements of this important safety management system. The UK HSE's management model (published in *Managing for Health and Safety* (HSG65)) has a similar element.

This **Planning and Implementing** element correlates directly with the first two parts of the PDCA cycle we referred to at the start of Element 2:

- Plan.
- Do.
- Check.
- Act.

Health and safety must be managed systematically. To achieve this a system should be in place to identify, implement and maintain occupational health and safety requirements. This requires planning so that:

- specific objectives can be set for an organisation to achieve; and
- specific processes can be put in place to allow the organisation to achieve those objectives.

## SETTING "SMART" OBJECTIVES

When health and safety objectives are set for an organisation, those objectives should be "SMART". The acronym SMART refers to the idea that objectives should be:

- **Specific** - a clearly defined, precise objective.
- **Measurable** - it is possible to measure achievement of (or towards) the target, usually by quantifying the objective.
- **Achievable** - it can be done.
- **Reasonable** - within the timescale set and with the resources allocated.
- **Time-bound** - a deadline or timescale is set for completion of the objective.

Think about the two following objectives:

- "Improve the safety culture of the organisation."
- "Review all 48 risk assessments within a 12-month period."

You can see that the first objective is **not** a SMART objective - it does not identify a precise target to be achieved. However, the second objective **is** a SMART objective, since the target is precisely defined, a number is given that allows easy measurement of success and a timescale has been allocated.

When setting health and safety objectives, consider the following:

- **Who is going to set the objectives** - the involvement of senior management, perhaps with guidance from health and safety practitioners/advisors.
- **How objectives will be set at each functional level** - objectives need to be set at different levels, or within different parts of the organisation to achieve organisational goals. This can be achieved by setting and agreeing personal targets with individuals through the job appraisal and review process. All objectives should be recorded so that they can be reviewed at the appropriate time.



# Importance of Planning

- **Legal and other requirements** - objectives must recognise legal standards and other requirements set by, for example, corporate policy, insurance companies, etc.
- **Hazards and risks** - the hazards inherent in the workplace and the risks created must be taken into account when setting objectives. If this is not done then the organisation may pursue objectives that are irrelevant, or that address only trivial matters.
- **Technological options** - as technology changes organisations should take advantage of that new technology and set objectives accordingly.
- **Financial, operational, and business requirements** - health and safety objectives should integrate with financial, operational and business objectives so that there is no conflict of goals.
- **Views of interested parties** - for objectives to be achievable it is important that some element of consultation takes place and that the views of interested parties are considered. Employees (through their representatives), supervisors, managers, contractors, clients, customers, landlords, co-occupiers, suppliers, manufacturers and designers may all be able to contribute to the health and safety objectives of an organisation.

## KEEPING UP TO DATE

Identifying and keeping up to date with legal requirements is an essential part of the planning process. A basic health and safety planning process considers the three fundamental questions: 'Where are we now?', 'Where do we want to be?' and 'How do we get there?' The answer to the second question, 'Where do we want to be?', should always recognise legal compliance as a minimum standard to be achieved in the workplace.

The 'Where are we now?' process will then involve comparison with relevant legal standards in the form of a gap analysis to identify where legal compliance is not being achieved. This requires up-to-date knowledge of the relevant legal standards. There are various methods by which organisations and individuals can keep up to date regarding health and safety legislation including:

- In the UK, the HSE website and HSE electronic newsletters (<http://www.hse.gov.uk>).
- <http://osha.europa.eu/en/legislation> is a good point of reference for EU legislation, and within the EU OSHA website there is a national section at <http://osha.europa.eu/en/oshnetwork/focal-points> which contains information on national activity.
- In the US, the OSHA website <http://www.osha.gov/> contains a useful section on regulations. In Australia similar information is available from Worksafe, Western Australia at <http://www.commerce.wa.gov.au/worksafe>.
- Organisations and charities with an interest in occupational safety and health, such as the Institution of Occupational Safety and Health (IOSH) and the Royal Society for the Prevention of Accidents (ROSPA) in the UK.
- National professional health and safety publications which carry information on developing legislation - in the UK, one such example is *Safety & Health Practitioner*, the official magazine of IOSH.
- Subscription news and update services offered by private businesses (e.g. Barbour).
- Attendance at legislation update seminars and conferences.

## REVISION QUESTION

1. What is meant by SMART objectives?  
(Suggested Answer is at the end.)

# Principles and Practice of Risk Assessment

## KEY INFORMATION

- Risk assessment is the formalised process of identifying hazards, evaluating risk and then either eliminating or controlling that risk to an acceptable level.
- A hazard is something with the potential to cause harm.
- Risk is the likelihood that a hazard will cause harm in combination with the severity of injury, damage or loss that might foreseeably occur.
- The main objective of risk assessment is the prevention of accidents and ill-health.
- There are five steps to risk assessment:
  1. Identify the hazards.
  2. Identify the people who might be harmed and how.
  3. Evaluate the risk and decide on precautions.
  4. Record the significant findings and implement them.
  5. Review and update as necessary.
- Hazards can be identified using various methods such as task analysis, legislation, manufacturers' information and incident data.
- Workers, contractors, visitors and members of the public must all be considered in the risk assessment process.
- Risk can be scored or rated using a simple Risk = Likelihood x Severity calculation, where likelihood and severity are allocated numbers on a scale.
- If the risk is unacceptable then controls must be introduced to either eliminate hazards or create a safe place, or a safe person. Any residual risk must be acceptable.
- Legal standards can often be used to indicate what level of risk is acceptable.
- Assessments must be reviewed on significant change, after an incident, and perhaps periodically.
- Sometimes it is necessary to focus risk assessment on a vulnerable person or group of workers, such as young persons, pregnant women and nursing mothers, disabled workers and lone workers.

## LEGAL REQUIREMENTS

ILO Convention C155, Article 15, imposes a duty to ensure that a workplace is, so far as is reasonably practicable, without risk to employees. It is generally accepted that this means a risk assessment needs to be carried out, because to determine whether or not something is "reasonably practicable" the cost of doing it (in time, effort and money) needs to be evaluated against the risk of harm. We will consider the meaning of the term "risk" in the next section.

Hazards can be broadly classified as physical (e.g. electricity), chemical (e.g. mercury), biological (e.g. hepatitis), ergonomic (e.g. very repetitive handling) and psychological (e.g. stress).

Note that a hazard is the "something" that causes the harm. If an office worker receives an electric shock from an item of electrical equipment that has a damaged cord, then electricity is the hazard, not the damaged cord. It is electricity that causes the harm; the damaged cord is the failure in the controls or preventive measures. If the cord were not damaged then the hazard would still be present (electricity is still running through the equipment) but it would be properly controlled and the electric shock would not occur.

## GLOSSARY

### HAZARD

Something with the potential to cause harm.

# Principles and Practice of Risk Assessment

## GLOSSARY

### RISK

The likelihood that a hazard will cause harm in combination with the severity of injury, damage or loss that might foreseeably occur.

Risk can be described qualitatively using words such as “high”, “medium” or “low”. There will always be some subjectivity involved since the words represent one person’s opinion of the risk level. Different individuals have very different personality characteristics, so two people may disagree on the level of risk inherent in a hazard.

Risk can also be defined quantitatively using hard data. This type of quantified risk assessment is far more rigorous than qualitative risk assessment and is beyond the scope of this course.

## GLOSSARY

### RISK ASSESSMENT

A formalised process of identifying hazards, assessing the risk that they generate and then either eliminating or controlling the risk.

Risk assessment is a process that people do automatically all the time. When you cross the road you carry out a risk assessment; when you drive a car you carry out a risk assessment; when you boil a kettle you carry out a risk assessment. But, of course, this assessment is normally done very quickly and without conscious thought or effort. If you are not very good at this process then you will not live long.

There are occasions in normal life, however, when you might become more aware that you are assessing risks. If you look after very young children you will consciously think about the particular hazards that present a risk to a child. If you start to take part in certain sports or activities, such as rock climbing or scuba diving, you will start to assess risks in your conscious mind rather than doing it automatically.

A workplace risk assessment is simply an extension of this automatic self-preservation mechanism.

## OBJECTIVES OF RISK ASSESSMENT

The aim of risk assessment is to ensure that hazards are eliminated, or risks minimised by the correct application of relevant standards.

The objectives of risk assessment are to prevent:

- Death and personal injury.
- Other types of loss incident.
- Breaches of statute law, which might lead to enforcement action and/or prosecution.
- The direct and indirect costs that follow on from accidents.

These objectives relate directly to the moral, legal and economic arguments we discussed in Element 1.

## DIFFERENT TYPES OF INCIDENT

A failure to adequately assess risk in the workplace will lead to incidents, which can be categorised into various different types depending on outcome:

- **Accident** - An unplanned, unwanted event that leads to injury, damage or loss. An accident is unplanned. Any deliberate attempt to cause injury or loss is therefore not an accident.
- **Injury accident** - an unplanned, unwanted event that leads to personal injury of some sort, e.g. a worker on the ground is struck on the head and killed by a brick dropped by another worker from a 5m-high scaffold.
- **Damage-only accident** - an unplanned, unwanted event that leads to damage to equipment or property, e.g. a lorry driver misjudges the turning circle of his vehicle and knocks over a barrier at the edge of a site entrance, crushing the barrier beyond repair.
- **Near miss** - an unplanned, unwanted event that had the potential to lead to injury, damage or loss (but did not, in fact, do so), e.g. a worker drops a spanner from a scaffold, narrowly missing a pedestrian, but no injury or harm was caused.
- **Dangerous occurrence** - a specified event that has to be reported to the relevant authority by statute law.
- **Ill-health incident** - an unplanned, unwanted event that leads to ill-health of some sort.



Frank Bird Accident Triangle

### Accident Ratios

Accident ratios (often referred to as accident triangles) display the relationship between numbers of accidents with different outcomes. Research shows that this relationship forms a triangle, with the most serious outcomes being the least numerous (at the top) and those with proportionally higher numbers but less serious results forming the base. A number of different triangles is used to display these relationships; one proposed by Frank Bird is shown in the figure above.

The important message of the accident triangle is that serious-outcome accidents tend to happen rarely and randomly. They are notoriously difficult to predict (if they were not, it would be easy to prevent them from happening). Near misses/incidents, on the other hand, happen far more frequently (600 times more frequently, according to Bird). Many near misses will be minor events of little or no consequence; if they happen again, there would be no serious outcome. But some near misses will have the potential for very serious injury. These near misses should be thoroughly investigated and preventive measures put in place. In this way a serious-outcome incident is prevented. You can also see that as near-miss events form the bottom of the triangle they form the greatest proportion of incidents. By taking action to understand this large body of data, deficiencies in the safety management system can be identified and more serious outcomes prevented.

Note that accident ratio studies are based on statistical ratios. They cannot be used to predict exactly when a certain type of event might occur. For example, just because an organisation has had 600 near misses/incidents reported does not mean that the very next type of event will be a serious injury accident. That is an oversimplification of the accident triangle.

### THE RISK ASSESSORS

Risk assessments should be carried out by competent people. In this context the word “competent” would mean people who have sufficient training, knowledge, experience and other abilities. The exact training, knowledge and experience required will vary depending on circumstances. In some instances simply an ability to identify, read and correctly interpret guidance on a topic is sufficient. In others, a detailed understanding of background knowledge is essential to be able to correctly evaluate risk.

A risk assessment can be carried out by one person. This is not ideal in many instances since it relies on one person’s opinion and judgment. Ideally, risk assessment will be carried out by a team. This allows for various views and opinions to be taken into account and so may result in a more successful assessment. A risk assessment team might include:

- Workers familiar with the tasks and areas to be assessed.
- Health and safety specialists, such as safety practitioners and occupational health nurses.
- Technical specialists, such as mechanical and electrical engineers.
- Line managers responsible for the tasks or areas being assessed.
- Worker safety representatives.



# Principles and Practice of Risk Assessment

The size and composition of the team will vary depending on the nature of the workplace and the complexity of the risk assessment process being used. Note that it is not necessary for all members of the team to be competent in the risk assessment process, simply for some or one of the team members to be a competent person. The involvement of non-competent persons is useful for a number of reasons:

- Those team members may identify hazards and risks that might otherwise be missed (two pairs of eyes are better than one).
- They may ask questions and propose solutions that might not be considered otherwise.
- It allows experience to be safely gained in the practice of risk assessment.
- It facilitates employee awareness, involvement and consultation and so enhances the safety culture.

## CRITERIA FOR A SUITABLE AND SUFFICIENT ASSESSMENT

A risk assessment should be “suitable and sufficient”. In other words, it should be good enough to fulfil legal requirements and prevent foreseeable injuries and ill-health from happening. In particular, it should:

- State the name and competence of the assessor (and any additional specialist help obtained in carrying out the assessment).
- Identify the significant hazards and risks arising out of or connected with the work, i.e. those that are most likely to occur and result in harm being caused, with any remaining risks being at an acceptable low level.
- Identify all those persons who could be at risk, including workers and others such as visitors. Vulnerable people, such as young persons, should also be identified.
- Evaluate the effectiveness of current controls.
- Identify other protective measures that are required to control the risk to an acceptable level.
- Enable the employer to identify and prioritise the measures that must be taken to protect people from harm, including complying with any relevant legal provisions.
- Record the significant findings of the risk assessment.
- Be appropriate to the nature of the work and remain proportionate to the risks.
- State the period of time for which it is likely to remain valid.

In other words, the assessment should be proportionate to the risks in the workplace.

- A low-risk workplace with a few straightforward, often predictable hazards (e.g. a retail shop) should have a relatively simple risk assessment carried out by a competent person (perhaps the manager) by reference to some basic guidance documents.

- A high-risk workplace (e.g. a chemical works) should have a far more complex risk assessment carried out by competent persons (PhD industrial chemists, etc.) using detailed, complex reference material.

The first assessment might take a few hours to complete; the second might take weeks.

## CARRYING OUT A RISK ASSESSMENT

### TOPIC FOCUS

Risk assessment can be described as a five-step process:

1. Identify the hazards.
2. Identify the people who might be harmed and how.
3. Evaluate the risk and decide on precautions.
4. Record the significant findings and implement them.
5. Review and update as necessary.

## IDENTIFYING HAZARDS

The first step in the risk assessment process is to identify all the significant hazards associated with the work. Hazards are the things with the potential to cause harm. It is important to identify both the **safety hazards** that might give rise to immediate physical injury (such as moving parts of machinery, vehicles and potholes in a pedestrian walkway), and the **health hazards** that might cause disease or ill-health (such as asbestos, loud noise and repetitive handling). This hazard identification might be done by task analysis, reference to guidance or manufacturers' information, or by inspection of the workplace.

Remember that a risk assessment is a tool for identifying all the significant hazards that exist in a workplace - all the things that have the potential to cause harm. It is not a tool for only identifying those hazards that are poorly controlled. For example, in a new office with modern computer screens and keyboards, where someone has left a pile of boxes in front of a fire-exit door, the hazards are electricity, display-screen equipment, fire and poor housekeeping - so, not just the pile of boxes in front of the fire-exit door, because that would ignore all the other hazards that exist in the office. In an office you are arguably at far greater risk from death by electric shock than death by boxes left in front of a fire-exit door. The first assessment takes the electrical hazard into account, the second ignores it and therefore fails.



## Hazard Identification Methods

There are various methods that might be used to identify hazards in a workplace as part of a risk assessment process:

- **Inspections**

A formal inspection can reveal the various hazards that are present and need to be considered in the risk assessment. One problem with this method is that it is being carried out in an existing workplace, so any identified hazards already exist. This is contrary to the general principle of safety management, which is that the hazard should not be introduced until after the risk assessment has been carried out and the controls put in place.

- **Task Analysis**

This is a useful method for identifying hazards, since it allows hazards to be spotted before work starts, rather than after the work has started. Task analysis involves breaking a job down into component steps and identifying the hazards associated with each step, so that the safe working method can then be established to deal with each hazard. This can be done before work starts as part of the planning process, and is how Safe Systems of Work (SSWs) are developed.

### TOPIC FOCUS

There is a useful acronym for task analysis -

**SREDIM:**

- **S**elect the task.
- **R**ecord the steps or stages of the task.
- **E**valuate the risks associated with each step.
- **D**evelop the safe working method.
- **I**mplement the safe working method.
- **M**onitor to ensure it is effective.

- **Legislation**

Knowledge of the legal standards that apply to a particular workplace will help enormously in identifying significant hazards. For example, knowledge of the law relating to work at height will allow a competent assessor to identify which tasks might be defined as work at height and which can be ignored. Legislation is often accompanied by guidance documents, which can be very useful in the identification of hazards. For example, in the UK guidance documents exist to spell out all the hazards that exist in engineering workshops.

- **Manufacturers' Information**

When a new item of plant, machinery or equipment is purchased it usually comes with an instruction book, which contains information about all the related hazards and instructions for safe use, cleaning and maintenance. Similarly, when a new substance is purchased it comes with labels and a Material Safety Data Sheet (MSDS), which clearly identifies the hazards of the substance.

- **Incident Data**

Internal accident and near miss data can be useful in identifying hazards. The main limitation here is that a hazard may be very significant but may not yet have caused harm in the organisation and may therefore go unnoticed. External data, such as national statistics published by the authorities, can be more useful since they identify the real hazards and risks based on a much larger population size.

# Principles and Practice of Risk Assessment

## Identifying the Population at Risk

When identifying people at risk, think not only of those carrying out particular activities but also of those who may be affected by those activities. Individuals do not need to be named; rather general groups or populations identified.

- **Workers/operators** - may be directly involved with the activity, working nearby or passing by. Some hazards create risk only for the employee carrying out the work (e.g. a worker up a ladder is at risk from falling) while others create general risk for all employees (e.g. a vehicle traffic route that all employees may have to cross in order to reach a staff car park).
- **Maintenance staff** - are often involved in the removal of the usual safeguards present in the workplace because of the nature of maintenance work (e.g. the lift engineer who has to climb onto the top of a lift carriage in the lift shaft, or the engineer who has to remove machine guards to repair a breakdown). If the normal safeguards are being removed or bypassed, then risk to these workers increases and other methods have to be found to control this risk.
- **Cleaners** - may be exposed to greater risk because cleaning work may involve the removal of safeguards or additional activities that create additional risk (e.g. window cleaning from an access cradle). Many cleaners also work alone, outside normal working hours, and therefore lone working becomes an issue.
- **Contractors** - may be carrying out work independent of the work being carried out by employees, or may be working alongside employees. The workplace creates risks for these contractors and the contractors create risks for the workplace. All these risks have to be considered through the risk assessment process.
- **Visitors** - to the workplace may not be working but are still exposed to certain types of risk (e.g. fire).
- **Members of the public** - may simply be in the vicinity of the workplace, yet still affected by certain types of hazard. For example, a release of toxic chlorine gas from an industrial site will affect passers by and those who live near the site. In some instances, trespassers (uninvited visitors) may get on to the site. This is particularly important with regard to the possibility of children coming onto the premises (e.g. playing on building sites, or near railway lines).

In certain instances, identifying *general* groups of people who might be harmed by hazards is inadequate and a more specific focus has to be applied to a particular person, or type of person, who is more vulnerable, for one reason or another. Young people, new and expectant mothers, disabled workers and lone workers are all special cases (see later in this element).

## EVALUATING THE RISK AND ADEQUACY OF CURRENT CONTROLS

Having identified a particular hazard and the people who might be harmed by it the next step in the risk assessment process is to answer a simple question: is the level of risk generated by the hazard acceptable, or does it need to be reduced?

The question may be simple, but the answer can at times be complex.

Risk is a combination of the likelihood that a hazard will cause harm and the foreseeable severity of injury, should harm occur.

Risk can be qualitatively described using words such as "very high", "high", "medium", "low" or "insignificant". The problem with these or similar words is that they mean different things to different people, and so they are not used consistently.

An alternative approach that is commonly adopted is to break risk down into its two component parts and define each separately:

$$\text{Risk} = \text{Likelihood} \times \text{Severity}.$$

By simply assigning a score to each word it is possible to calculate a risk rating for a particular hazard.

For example:

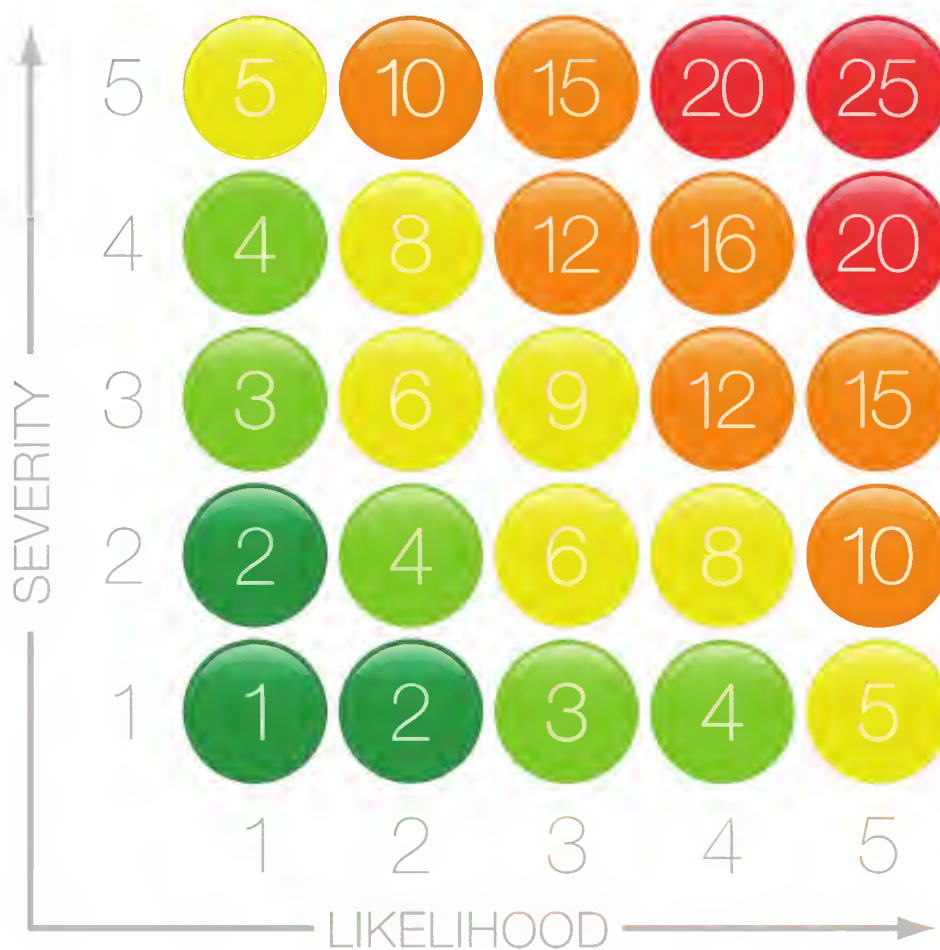
Likelihood	Severity
1 = extremely unlikely	1 = very minor injury
2 = unlikely	2 = first-aid injury
3 = possible	3 = lost-time injury
4 = likely	4 = hospital treatment
5 = very probable	5 = disabling injury

Using this scoring system the risk generated by a trailing electrical cord positioned across a busy corridor might be calculated as  $5 \times 4 = 20$  (very probable x hospital treatment).

The same electrical cord trailing on the floor close to the rear wall of a rarely visited plant room might be rated as  $1 \times 4 = 4$  (extremely unlikely x hospital treatment).

Note that in both instances the severity of injury is the same. This will sometimes be the case when the same hazard is being considered, but not always. For example, put the trailing cord in an old persons' care home and the foreseeable injury becomes more severe simply because the elderly have brittle bones and suffer severe injuries when they fall over.

There is no one right or wrong way to apply this semi-quantitative risk evaluation system. Different organisations use different numbers and descriptions of likelihood and severity. It is the general principle that is important here, not the exact words and meanings.



Risk Assessment Matrix

The graphic above demonstrates how risk levels can be categorised using numbers and colour coding. In this example, green identifies a low risk, and red identifies a high risk, and intermediate risks are shown in between.

Using a semi-quantitative risk rating system such as our example above can be useful for several reasons:

- **Clarity of thinking** - people tend to think more carefully about likelihood and severity of foreseeable injury when they are asked to use this type of scoring system, and so give a more accurate end result.
- **Consistency of approach** - different people can use this system and will get similar results.
- **Prioritisation** - since risk is now represented by a number, and the higher the number the greater the risk, it is possible to easily separate out the various risks presented by several hazards and rank them in order.
- **Timescale** - it is even possible to allocate particular timescales to the risk ratings that are calculated using this type of system. This approach is not universal, but is used by some organisations.

A construction company uses the following timescales in relation to the risk rating system outlined above:

Risk Rating	Action and Timescale
15 and above	Unacceptable. Work may not start. Additional controls must be introduced to reduce below 9.
9 to 14	Tolerable. Additional controls must be introduced as soon as possible and no later than 24 hours after assessment.
5 to 8	Tolerable. Must be reduced to below 5 within one week.
4 or below	Acceptable. If simple action can reduce further then must be done within one week.



# Principles and Practice of Risk Assessment

## Residual, Acceptable and Tolerable Risk

When carrying out a risk assessment the *actual* situation that *really exists* within the workplace must be assessed - not the general hazards that would normally apply to the type of work typically, and not the way that the company policy document says the work should be carried out. To be effective the risk assessment has to be based on the workplace that really exists.

The assessment can also take into account all the current controls and precautions that exist. What is being assessed is the real situation with all the current controls in place. For example, an assessment considering electrical safety in an office environment should take into account whether there is a system in place for the routine inspection and testing of portable electrical appliances. If there is, that may indicate that the risk is being controlled to an acceptable standard. If there is not, then that may indicate that the risk is not being controlled to an acceptable standard, even though all the portable appliances look as if they are in a safe working condition.

When existing controls are taken into account the current risk level can be estimated as described above - Likelihood x Severity.

The risk that remains once these existing controls have been taken into account can be referred to as the **residual risk**.

- If the residual risk is low then it might be considered **acceptable** - the existing controls are adequate. Nothing more need be done. In effect, the risk assessment has confirmed that the current situation is acceptable.
- If the residual risk is high, a decision has to be made about whether this residual risk is **tolerable** or **unacceptable**:
  - **Tolerable** implies that it is not acceptable but it can be tolerated for a short time while interim controls are put into place.
  - **Unacceptable** implies that the risk level is too high for work to be allowed.

In the case of both tolerable and unacceptable risk additional controls will need to be put in place to reduce the risk down to an acceptable level. Once these controls have been implemented a new residual risk level is created.

## Use of Guidance

The semi-quantitative risk rating system described earlier is very useful as a practical tool for the day-to-day management of risk in a fast-changing workplace. It allows for a simple and consistent approach to the management of risk and the decision-making process.

However, the one thing that this system does not consider is legal standards. If there are clear legal standards about the controls that should be applied to a particular hazard in a workplace, then the use of a scoring system and risk prioritisation and timescales, etc. becomes largely redundant. The only question that really matters is: are we doing what the law requires? Yes or no?

If there is no clear legal standard, or where the legal standard is open to interpretation, there may still be guidance published by the authorities that clearly identifies the controls that are expected. Reference to the law, any semi-legal codes of practice, and guidance published by enforcement agencies is therefore important in determining what the precautions should be for a particular hazard in the workplace.

## Principles of Prevention

When hazards are identified through the risk assessment process it is necessary to decide on the precautions needed to control those hazards to an acceptable level. This is the most important part of the risk assessment - identifying the further action that is needed and taking that action.

When trying to decide what further precautions might be appropriate to a particular situation a useful approach can be to use a prevention hierarchy. We will look at the control hierarchy in greater detail later in this element, but the general principle is:

Eliminate the hazard	Remove the source of the risk. This is the most effective option since removal of the hazard eliminates the risk associated with that hazard.
Create a safe place	Use engineering controls to change the hazard itself, or guard or enclose the hazard in some way to prevent people coming into contact with it.
Create a safe person	Develop safe working methods or systems of work so that people are exposed to the hazard in a controlled manner. This requires information, instruction, training and supervision to be provided, and safe behaviour to be enforced.

It is clear that eliminating a hazard is the best option available since the risk associated with a hazard is then also eliminated. Unfortunately, this is often not a viable option. The next best option is to build safety into the workplace. The least effective option is to rely on the safe person approach, and the reason for this relates directly back to the human factors we discussed in Element 3. Workers do not behave in an ideal way in the workplace - they break rules knowingly and are subject to human error. The safe person approach is prone to the frailties of human nature.

## Priorities and Timescales

A straightforward link can be made between the level of risk associated with a particular hazard and the prioritisation of that hazard: the higher the risk the higher the priority.

You might also assume that a high risk demands prompt corrective action and a low risk can be allowed to persist for a longer period of time, but there are two problems with this:

- A low risk level might be low priority, but it might also have a very simple, quick, low-cost remedy. A law court might not accept that something that is quick and easy to address should be allowed to persist; it should be addressed immediately because it can be done immediately.
- A medium risk might demand a medium priority, but that does not necessarily mean that a law court would accept that an intermediate timescale would be acceptable. The level of risk to workers should always be acceptable - not just acceptable after 24 hours of working.

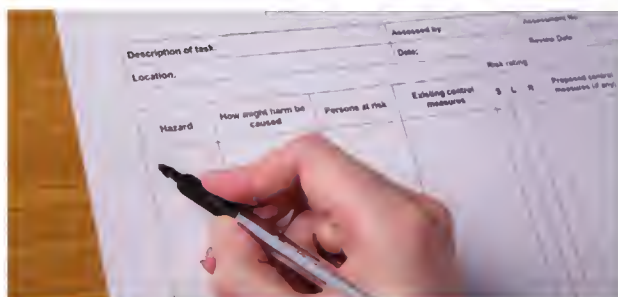
This may mean that some interim precautions are put in place that control tolerable risk to an acceptable level but do not represent an ideal long-term solution to the problem.

## RECORDING SIGNIFICANT FINDINGS

The significant findings of a risk assessment should be recorded to provide a statement of the hazards in the workplace, the extent of the risks that they present, and the action taken to control those risks.

There is no standard format for risk assessments so different organisations can adopt a format that is most appropriate to their circumstances. Typical content would include:

- Identification of the activity/area assessed and of the significant hazards.
- Identification of groups at risk and those especially at risk.
- Evaluation of the risks and the adequacy of existing control measures.
- Action plans for implementing further precautions needed.
- Date of assessment and name of the competent person carrying out the assessment.
- Review date.



A typical risk assessment form

## RISK ASSESSMENT REVIEW

### TOPIC FOCUS

A number of situations can trigger a review of a risk assessment:

- Significant change to something that the risk assessment relates to:
  - Process.
  - Substances.
  - Equipment.
  - Workplace environment.
  - Personnel.
  - Legal standards.
- There is reason to suspect that the assessment is not valid:
  - Accident.
  - Near miss.
  - Ill-health.

It is also good practice to review risk assessments on a regular basis. This is often done by determining a frequency of review based on the level of risk associated with the activity in question. An annual review of risk assessments is common practice in many workplaces.

## SPECIAL CASES AND VULNERABLE WORKERS

There are times when a risk assessment has to focus on one person, or one specific group of workers because they are more vulnerable to particular hazards (or more at risk).

### Young Persons

A young person is often defined by local law (e.g. in the UK a young person is anyone under the age of 18 years).

There are several reasons why a young person might be more vulnerable to risk in a workplace:

- Lack of experience in workplaces in general.
- Physical and, perhaps, mental immaturity.
- Poor perception of risk.
- Heavily influenced by peer group pressure.
- Eager to show a willingness to work.
- Less developed communication skills.



# Principles and Practice of Risk Assessment

For these reasons you often need to think more carefully about the work that a young person is doing. It may be necessary to:

- Carry out risk assessments specifically with young persons in mind.
- Prohibit a young person from carrying out certain high-risk activities (e.g. operating complicated machinery).
- Restrict their work patterns and hours (no night-shift work or overtime).
- Train and supervise them more than other workers.
- Provide mentors to monitor and supervise young persons more closely than other workers and to provide clear lines of communication.
- Provide specific health surveillance.



Young people carrying out an experiment

## Expectant Women and Nursing Mothers

Pregnant women and women who are nursing (breastfeeding) are more at risk from certain types of hazard. In most of these instances the hazard presents a risk not only to the woman but also to the baby. Many of these hazards can cause miscarriage, birth defects, or ill-health in the baby.

In certain rare instances it may be necessary to prohibit women of child-bearing capacity from certain types of work, e.g. handling certain types of chemical that are toxic to reproduction, on the basis that any exposure may cause harm.

In all cases where a woman reports that she is pregnant, a risk assessment should be carried out focusing on the work that she is doing and the hazards that might increase risk to her and the child. It may then be necessary to:

- Change the type of work or the way that it is done.
- Change the hours of work.
- Suspend the woman from the workplace.

These options are usually subject to local statute law, and remember that there will usually be other general employment and anti-discrimination legislation that should be considered, not just health and safety law.

## TOPIC FOCUS

Hazards that present greater risk to pregnant women:

- Certain hazardous chemicals (e.g. lead).
- Certain biological agents (e.g. the rubella virus).
- Manual handling, especially later in pregnancy.
- Extremes of temperature.
- Whole-body vibration.
- Ionising radiation.
- Night-shift work.
- Stress.
- Violence.

## Disabled Workers

People with disabilities may be at greater risk from particular hazards depending on the nature and extent of their disability. For example, a visually-impaired worker may be able to carry out a packaging operation at their workstation without any risk to themselves or others, but they may find it very difficult to evacuate from the building during a fire using an escape route that is unfamiliar to them. In this instance they may need some assistance in the form of an "evacuation buddy" (assistant).

During the risk assessment process it may be necessary to:

- Identify certain health and fitness criteria for some jobs and then evaluate staff against these criteria. This may result in those with a certain disability being excluded from doing these jobs, e.g. forklift-truck drivers should have their eyesight checked before being allowed to drive.
- Identify workers with known disabilities and consider what the implications of their particular type and level of disability might be.

Again, remember that there is usually other employment and anti-discrimination legislation that should be considered at the same time as any relevant health and safety law.

## Lone Workers

People who work entirely on their own for periods of time, or those who are not alone but are not with colleagues on whom they can rely for help, might be classified as lone workers. For example, a service engineer who spends four hours alone in a plant room servicing machinery is a lone worker, but so is a health-care worker who travels around in the local community visiting elderly patients to provide care (even though they may be in sight of other people at all times during their working day).

Lone workers are a group of workers who are especially vulnerable in certain instances:

- They may be more at risk of violence, particularly if the worker is exposed to members of the public, has to travel out into the community, or is involved in work that brings them into contact with violent people, e.g. in prisons or mental-health institutions.
- They may be more at risk if they are injured or fall ill. Certain types of work involve a high risk of personal injury or ill-health (e.g. confined space entry). In these situations lone working may be inappropriate or additional precautions may be necessary to protect the individual. We will discuss precautions that might be adopted to safeguard lone workers in more detail later in this element.



Lone worker in a public place

### MORE...

<http://www.hse.gov.uk/risk/index.htm>

### HINTS AND TIPS

Try to see the bigger picture and consider the general principles rather than focusing too intently on the detailed application of an idea in just one specific workplace.

### REVISION QUESTIONS

2. Why is the distinction between hazards and risks so important to health and safety management?
3. Give the purpose and objectives of risk assessment.
4. What do accident triangles show?
5. What techniques are used for identifying hazards?
6. Give the five steps involved in risk assessment.
7. Apart from operators, what particular staff groups require special consideration during a risk assessment?
8. What factors are used to evaluate risk?
9. What is residual risk?
10. What conditions might trigger a risk assessment review?

(Suggested Answers are at the end.)

# Principles of Control and a Basic Hierarchy of Risk-Reduction Measures

## KEY INFORMATION

- There are some general principles of prevention that can be applied to hazards in the workplace. These principles rely on the correct selection of technical, procedural and behavioural controls.
- The general hierarchy of control is:
  - Elimination.
  - Substitution.
  - Engineering controls.
  - Administrative controls.
  - Personal protective equipment (PPE).

All workplaces have hazards and all hazards create risk. Good safety management is the logical process of identifying the significant hazards, evaluating the risk created by each and then either eliminating the risk entirely, or reducing it to an acceptable level by introducing controls where necessary.

## GENERAL PRINCIPLES OF PREVENTION

There are some general principles of prevention that can be applied to eliminate hazards and reduce risk:

- **Avoid risks** - where possible.
- **Evaluate risks that cannot be avoided** - through the risk assessment process.
- **Combat risks at source** - by going to the source of the problem directly (e.g. if there is a noise hazard in the workplace, tackle the source of the noise).
- **Adapt work to suit the individual** - by applying good ergonomic principles to job and workplace design (e.g. if people are becoming tired when carrying out repetitive work, introduce job rotation).
- **Adapt to technical progress** - by taking advantage of new technology as it becomes available (e.g. buy mobile phones for lone workers).
- **Replace the dangerous with the non-dangerous or less dangerous** - by substituting one hazard with something else which is less hazardous (e.g. replace a corrosive chemical with one that does the same job but is classified as "irritant" and therefore less harmful).
- **Develop a coherent overall prevention policy** - by consistently using the same approach across the whole organisation.
- **Give priority to collective protective measures over individual protective measures** - by creating a workplace that is safe for all rather than relying on measures that only protect one worker at a time (e.g. install a guard rail rather than rely on PPE).
- **Give appropriate instructions to workers** - workers must receive information on the correct systems of work to be adopted, and the organisation must also adequately supervise the workers to ensure that instructions are followed.

## TOPIC FOCUS

**Collective protective measures** are those that protect the whole workplace and everyone who works there, as opposed to **individual ones**, which protect single individuals.

These two approaches are behind the concepts of a safe place and a safe person, outlined in Element 5:

- **Safe place** - the environment of the workplace, where the emphasis is on collective protection through the correct design, selection and engineering of premises, plant, machinery, equipment, processes and substances.
- **Safe person** - individual behaviour, where the emphasis is on the competence of workers who have received adequate information, instruction and training and follow safe systems of work.

These principles are guidelines on how employers should approach the prevention and control of risks. When selecting control options from these general principles you should be aware that preventive measures can be categorised as:

- technical;
- procedural; or
- behavioural.

You will remember that human factors have a part to play in effective health and safety management, so it might be expected that a technical control will be more effective than a procedural one, and that a procedural control will, in turn, be more effective than one that relies on behaviour. In this way we can think of the various control options as a hierarchy, where controls at the top of the hierarchy are the most effective and those at the bottom are the least effective.

## GENERAL HIERARCHY OF CONTROLS

We can expand the simple technical, procedural, behavioural hierarchy to give a more detailed hierarchy, which can then be used as a tool to select the most appropriate control measures. Sometimes, one control measure is effective in reducing the risk to an acceptable standard; in other instances, a combination of different types is needed.

The “hierarchy of control” is a concept used a great deal in health and safety. It is a list of options in order of importance, effectiveness or priority, written so that the most extreme and effective method of control is at the top of the hierarchy, with the least effective at the bottom.

### TOPIC FOCUS

The general hierarchy of control:

- Elimination.
- Substitution.
- Engineering controls.
- Administrative controls.
- Personal protective equipment.

You can see from this hierarchy that “elimination” is the most effective option, with “PPE” a last resort.

The following elements make up the general hierarchy of control.

## Elimination

If a hazard can be **eliminated** then the risk created by that hazard disappears. This might be done by completely **avoiding** an activity that gives rise to risk. For example, an assembly workshop could stop welding steel in order to avoid the risks inherent in welding operations, and could buy in pre-fabricated metal components. The obvious limitation to this approach is that it is not possible to apply it to most of the activities carried out in the workplace.

In this case it may be possible to eliminate one or more hazards inherent in an activity. For example, hazardous substances can sometimes be replaced with materials that do the same job but present no risk to health (i.e. they are non-hazardous). Lifting equipment such as hoists and lifts can be used to completely eliminate manual handling. Machinery can be purchased that generates less noise, to such an extent that there is no risk of hearing damage.

## Substitution

Sometimes, hazard elimination cannot be achieved, but it is possible to substitute one hazard with another that creates less risk. For example, one hazardous substance classified as “toxic” (i.e. lethal in small doses) is substituted with one that is “irritant”. The replacement substance is still hazardous, but far less hazardous. A handling aid such as a trolley does not eliminate manual handling, but it does reduce the risk of injury associated with moving boxes around in a workplace.



# Principles of Control and a Basic Hierarchy of Risk-Reduction Methods

## Engineering Controls

Engineering controls involve the use of an engineering solution to prevent exposure to the hazard. This might be done by:

- **Isolation or total enclosure** - the aim here is to isolate the hazard physically so that nobody is exposed to it. This might be done by total enclosure or containment of the hazard, e.g. total enclosure of a process that generates dust to prevent its escape. Another example would be an acoustic enclosure of a noisy machine to reduce the noise reaching those nearby.
- **Separation or segregation** - simply placing the hazard in an inaccessible location. An example would be overhead wires, where an electrical conductor has been placed out of reach. In this case, precautions have to be taken to ensure that a safe distance from the overhead wires is maintained at all times (e.g. the use of upright posts to warn vehicle operators on a construction site of the safety distances for live electrical overheads).
- **Partial enclosure** - e.g. a hazardous substance might be handled in a fume hood or partial enclosure which the worker can reach into for handling purposes; air is extracted from the top or back of this partial enclosure so that any airborne contaminants are extracted from the enclosure away from the worker.
- **Safety devices** and features that ensure that the item is used in the correct way and not an unsafe way. For example, interlock switches are fitted to movable guards on machinery to ensure that when the guard is open the machine will not operate (but when the guard is closed, it will). With electrical systems reduced voltage devices, or residual current devices (RCD) could be used as a safety measure.

## Administrative Controls

Administrative controls are those that rely on procedures and behaviour, such as:

- **Safe Systems of Work**  
A safe system of work is a formal procedure that defines a method of working that eliminates hazards or minimises the risks associated with them. Safe systems of work are necessary whenever hazards cannot be physically eliminated and some element of risk remains. This applies to any task involving significant risk. There is therefore a specified routine for setting and detonating explosives in a quarry. The safe system is essential to prevent accidents or other incidents. Certain high-risk work activities may be controlled by a permit-to-work system (see later) as a part of the safe system of work.

- **Reduce Exposure**

If the degree to which a worker is exposed to a hazard can be reduced, then that worker is far less likely to have an accident with that hazard. For example, an engineer who spends all day working on machinery with hazardous moving parts is more likely to suffer injury than an engineer who only spends one hour of their working day exposed to the same hazard. The duration of each exposure (e.g. for 10 minutes, or for 8 hours) and the frequency of exposure (e.g. once a week, or 10 times a day) will both play a part here - the less time and the less frequently, the better.

**Reduce time of exposure** - many health hazards in the workplace cause a degree of harm that is entirely dependent on the dose that a worker receives, e.g. the harm caused by noise, vibration, radiation and most hazardous chemicals (such as lead). The dose is determined by two principal factors:

- Concentration, intensity or magnitude of the hazard present.
- Time of exposure.

For example, the harm to hearing caused by exposure to loud noise is entirely determined by the noise intensity (measured in decibels) and the duration of exposure:

- If you are exposed to the same noise intensity for twice as long, it gives you twice the dose of noise;
- If you are exposed for half as long, it gives you half the dose.

The dose of noise determines the degree of damage done: the greater the dose, the more harm done.

In all the cases where harm is dose-related, limiting the time of exposure is an important practical control measure that can be used in the workplace.

- **Information, Instruction, Training and Supervision**

We looked at the provision of training and information in detail in Element 3.

Training is instrumental in enabling employees to become competent. A competent employee is equipped with all relevant information and is fully aware of the hazards and the use of appropriate preventative measures. One way that an employer might provide basic health and safety information is through the use of safety signs (see opposite).

**Supervision** refers to management routinely checking workers and exercising their authority to control behaviour. Supervision, which is of critical importance as a management control, does not necessarily mean constant oversight of workers and the workplace. It is possible to supervise workers by making occasional contact with them at suitable intervals throughout a working period, and it is possible to supervise workers remotely (i.e. from a distance).



## TOPIC FOCUS

### Safety Signs

Safety signs combine shape, colour and pictograms to convey specific health and safety information or instructions. While there are regional variations, the standard safety signs are divided into five categories:

- **Prohibition** - directed at stopping dangerous behaviour, e.g. "No Smoking". The signs are circular with a black pictogram on a white background with a red border and red diagonal cross bar.
- **Warning** - tell people to be careful of a particular hazard, e.g. "Fork Lift Trucks Operating In The Area". The signs are triangular with a black pictogram on a yellow background with a black border.
- **Mandatory action** - instruct people to take a specific action, often relating to wearing personal protective equipment, e.g. "Eye Protection Must Be Worn". They are circular with a solid blue background with a white pictogram.
- **Safe condition** - identify safe behaviour or places of safety, e.g. "First-Aid Station". They are rectangular or square with a white pictogram on a green background.
- **Fire-fighting equipment** - identify particular items of equipment, e.g. "Hose Reels". They are rectangular or square with a white symbol or pictogram on a red background.



PROHIBITION  
No Unauthorised Entry



WARNING  
Toxic Material



MANDATORY  
Safety Boots Must Be Worn



SAFE CONDITION  
Emergency Escape Route



FIRE EQUIPMENT  
Hose Reel

Examples of Safety Signs

Pictograms must be used on the signs, not just text. This is to overcome any language barrier that might be created if text alone were used (as a result of illiteracy, learning difficulties, language, or eyesight impairment).

# Principles of Control and a Basic Hierarchy of Risk-Reduction Methods

## TOPIC FOCUS

Benefits of PPE	Limitations of PPE
<p>Can be used as an interim control while more expensive or difficult controls are put in place.</p> <p>In some situations it may be the only control option available.</p> <p>It may be needed as a back-up for emergencies when other controls have failed.</p> <p>It is usually cheap.</p> <p>It gives immediate protection.</p>	<p>It does not remove the hazard so should be used when other control measures have been exhausted.</p> <p>It only protects one person - the wearer. Also, its correct use relies on the wearer so training in correct use is necessary.</p> <p>It may not protect adequately if it is not fitted correctly, or the wrong PPE is selected.</p> <p>It may not be comfortable and may interfere with the wearer's ability to do the job.</p> <p>It may increase overall risk by impairing the senses (e.g. goggles that mist up, hearing protection that masks sounds like fire alarms).</p> <p>It may not be compatible with other items that have to be worn or used. Fit is also affected by personal features, such as beards and spectacles.</p> <p>If it fails, it exposes the wearer to danger. It may be contaminated if not stored correctly.</p> <p>People often do not like wearing PPE so it may not be worn.</p> <p>PPE may be more expensive than addressing the hazard at source.</p>

### Personal Protective Equipment (PPE)

There are instances where none of the above control measures can be used, and there are times when some of them can, but residual risk still remains. If this is the case then it may be necessary to use personal protective equipment (PPE). Many different types of PPE are available, such as:

- Ear defenders for noise.
- Gloves to prevent contact with substances hazardous to the skin.
- Respiratory protection against hazardous substances that can be inhaled (breathed in).
- Eye protection against splashes of chemicals and molten metals, mists, sprays and dusts, projectiles and radiation, including bright lights.

It is the duty of the employer to:

- Supply suitable PPE where risks cannot be controlled by other more effective methods.

“Suitable” means:

- Appropriate for the risks and the conditions.
  - Ergonomic (i.e. user-friendly).
  - It fits.
  - It does not increase overall risk.
  - It complies with any relevant standards.
- Ensure that when two or more items of PPE

have to be worn together they are compatible.

- Provide suitable storage facilities for PPE.
- Provide information, instruction and training to workers on the PPE they are expected to wear.
- Enforce the use of PPE.
- Replace or repair damaged or lost items.

### GLOSSARY

#### PPE

Equipment or clothing that is worn or held by a worker that protects them from one or more risks to their safety or health.

## REVISION QUESTIONS

11. Which general principles of prevention are not included in the following list?

- Avoiding risks (wherever possible).
- Evaluating risks that cannot be avoided by carrying out a risk assessment.
- Adapting work to the requirements of the individual.
- Adapting to technical progress.
- Replacing the dangerous by the non-dangerous or less dangerous.
- Developing a coherent overall prevention policy.

12. What type of sign is represented by the following pictograms?

(i)



(ii)



(iii)



(iv)



13. When should personal protective equipment be used?

(Suggested Answers are at the end.)

# Sources of Information on Health and Safety

## KEY INFORMATION

There are many sources of information on health and safety. Some of these are internal to an organisation, e.g. accident records, while others are external to an organisation, e.g. material safety data sheets provided by a chemical manufacturer.

## INTERNAL AND EXTERNAL INFORMATION SOURCES

Health and safety can be surprisingly complex. There is a wealth of information available that may need to be consulted. This information comes from two principal sources - those internal and those external to the organisation.

**Internal** information sources include:

- Accident records.
- Medical records.
- Absence records.
- Risk assessments.
- Maintenance reports.
- Safety representative inspections.
- Audit reports.
- Safety committee meeting minutes.

**External** information sources include:

- National legislation (e.g. regulations).
- Material safety data sheets from manufacturers.
- National codes of practice and guidance notes.
- National and international regulatory bodies, e.g. HSE in the UK, OSHA in Europe - see below for examples of their websites.
- Manufacturers' operating instructions.
- Trade associations.
- Safety journals and magazines.

## NATIONAL/INTERNATIONAL AGENCY INFORMATION SOURCES

- International Labour Organisation (UN)  
[www.ilo.org](http://www.ilo.org)
- Occupational Safety and Health Administration (USA)  
[www.osha.gov](http://www.osha.gov)
- European Agency for Safety and Health at Work (EU)  
[agency.osha.eu.int](http://agency.osha.eu.int)
- Health and Safety Executive (UK)  
[www.hse.gov.uk](http://www.hse.gov.uk)
- Worksafe (Western Australia)  
[www.commerce.wa.gov.au/WorkSafe/](http://www.commerce.wa.gov.au/WorkSafe/)

### Using Information Sources

These national and international agencies publish various types of information that can be useful when tackling health and safety issues. For example, the ILO publishes Conventions and Recommendations that form the basis of international law. Most of these agencies publish codes of practice and guidance that provide clear guidelines on legal standards and ways of achieving legal compliance. They also publish national and international statistics on occupational accidents and diseases.

## REVISION QUESTION

14. Identify two internal and two external sources of information about health and safety.  
(Suggested Answer is at the end.)

# Developing and Implementing Safe Systems of Work

## KEY INFORMATION

- A safe system of work is a formal procedure based on a systematic examination of work in order to identify the hazards. It defines safe methods of working that eliminate those hazards, or minimise the risks associated with them.
- It is the responsibility of the employer to develop safe systems of work with the involvement of both competent persons and employees who will be carrying out the work. These safe systems must be documented.
- Safe systems of work are usually developed using the process of task analysis, which involves breaking work down into a series of steps so that hazards can be identified and risk controlled at each step using technical, procedural and behavioural controls. Once developed, safe systems must be implemented and monitored to ensure continued effectiveness.
- Confined space entry, lone working and working and travelling abroad are typical work activities that will be subject to safe systems of work.

A safe system of work is a formal procedure based on a systematic examination of work in order to identify the hazards. It defines safe methods of working that eliminate those hazards, or minimise the risks associated with them. We can identify three key elements from this definition of a safe system of work (SSW):

- The SSW is **formal** - documented or recorded in some way.
- It results from a **systematic examination of work in order to identify the hazards** - it is the result of risk assessment.
- It **defines safe methods** - it is the safe procedure or work instruction.

## RESPONSIBILITIES OF THE EMPLOYER

It is the responsibility of the employer to ensure that safe systems of work are available for all work activities that create significant risk, just as it is the responsibility of the employer to carry out risk assessment of all work activities. Safe systems of work become particularly important when significant residual risk remains after control measures have been introduced into work processes. They are also particularly important when the normal control measures present in the workplace are removed, as often happens during maintenance work, cleaning or construction work.

## ROLE OF COMPETENT PERSONS

Safe systems of work should be developed by people with the relevant knowledge, experience, training and skills to understand the work under analysis. This implies that the people responsible for SSW development must be competent. In the absence of competence key hazards may be missed and key risk not addressed. This might result in a flawed SSW that does not actually control the risk to an acceptable level.

## WORKER INVOLVEMENT

The competent person must work closely with the workers who will be doing the work. The workers involved should take an active part in all stages of both the development and review of safe systems of work. Their practical knowledge and skills provide a valuable source of information about the nature of the risks, including unusual ones, and methods of working. They can also contribute by assessing plans and written documentation, and provide feedback on the effectiveness of the system in practice.

Involvement in this way enables workers to gain a deeper understanding of the hazards and risks, and of the way in which the safe system of work will minimise those risks. This encourages ownership of, and commitment to, safe working methods among workers. As management have involved and engaged the workforce (rather than simply enforcing a procedure they have developed) this can help develop a positive safety culture.



# Developing and Implementing Safe Systems of Work

## WRITTEN PROCEDURES

Documenting SSWs provides a precise reference for all workers, and ensures consistency of method, especially as the procedure may be complex or detailed - passing information via "word of mouth" is an unreliable method of communication and prone to errors. It also provides a reference for use in training and instruction in safe procedures and, as most procedures will need to be consulted on more than one occasion, the creation of a definitive document is a way of ensuring consistency whenever the process is carried out.

SSWs may be recorded in the form of short notes, or perhaps manuals detailing exactly what steps to take when carrying out more complex and lengthy procedures, such as calibrating and setting up grinding wheels. SSW documentation can be accompanied by checklists for employees to use as aids to ensure that all the correct steps are taken, and to tick off details before continuing with the next step or starting operations. Written SSWs also establish a standard that can be audited, and provide the employer with a written record, which may be required for legal reasons, such as in incident investigations or during enforcement action.

## TECHNICAL, PROCEDURAL AND BEHAVIOURAL CONTROLS

A safe system of work will involve all the elements of control that we identified earlier in the general hierarchy of controls:

- **Technical, or engineering, controls** - applied directly to the hazard in order to minimise the risk. This may involve fencing or barriers of different kinds to isolate workers from the hazard as far as possible, or security devices designed into equipment to stop its operation if there is a fault.
- **Procedural controls** - the way in which work should be carried out in relation to the hazard. They will specify the exact tasks involved, their sequence and the safety actions and checks that have to be taken. Often, procedures will relate to the correct operation of technical controls.
- **Behavioural controls** - how the individual worker acts in relation to the hazard. They include general points of good practice in the workplace, e.g. good housekeeping, and specific measures such as the use of PPE.

## DEVELOPMENT OF A SAFE SYSTEM OF WORK

As a part of the planning process safe systems of work are developed by task analysis, prior to work commencing. Task analysis is the process of breaking a job down into its component steps and then identifying the hazards associated with each step. The safe working method can then be identified to deal with each hazard.

### TOPIC FOCUS

#### PEME

When developing a safe system of work it is important to **identify the task** that is being carried out. The following factors can also be considered:

- **People:** Who is the SSW for? What level of competence or technical ability should they have? Are there vulnerable persons involved? How many people are working on the task?
- **Equipment:** What plant or equipment will be worked on? What equipment will be used? What safety equipment will be required? What are the hazards associated with the job and the equipment?
- **Materials:** What materials will be used or handled during the work? What are the hazards of the materials? How will waste be disposed of?
- **Environment:** In what type of environment will the work take place, e.g. space, light and temperature? Might any of these factors increase risk or need to be controlled?

Can you remember what the acronym **SREDIM** represents? We explained it earlier on when we discussed hazard identification and task analysis.

- **Select** the task to be analysed.
- **Record** the steps or stages of the task.
- **Evaluate** the risks associated with each step.
- **Develop** the safe working method.
- **Implement** the safe working method.
- **Monitor** to ensure it is effective.

So, for example, a vehicle breakdown and recovery company might perform task analysis on the job of changing the wheel on a customer's car.

This analysis might identify the key steps of the task as:

Step 1: Park breakdown vehicle.

Step 2: Remove faulty wheel.

Step 3: Fit spare wheel.

Step 4: Leave.

The risks associated with each of these steps would then be evaluated. For example, at Step 2, one of the risks identified might be movement of the customer's car after it has been raised up, causing it to collapse. Being struck by passing traffic might be another risk.

## INTRODUCING CONTROLS AND FORMULATING PROCEDURES

Once the risks have been evaluated the appropriate safe working method can be developed. In our example one of the controls would be for the worker to check that the car's handbrake has been firmly applied and that the handbrake actually works. Another would be for the worker to wear high-visibility clothing at all times.

Implementing the safe system of work is often more problematic than developing the safe working method, because implementation requires workers to adopt the new working procedures and use all the identified controls. We noted earlier that people's behaviour can be difficult to control. One way of overcoming or minimising this difficulty is to consult with and involve workers in the development process so that they are able to raise objections and concerns at an early stage; they then have some ownership of the new methods.

## INSTRUCTION AND TRAINING

A key step in the implementation of any safe working method is the provision of information, instruction and training. In some cases, if the workers have the competence to interpret and correctly follow new methods, simply informing them of changes to existing methods will be sufficient. In other instances, detailed theoretical and practical training will have to be provided to ensure that workers understand and can apply the safe working methods.

## MONITORING

The last step of the task analysis process is monitoring; once the safe working method has been put into place it should be checked periodically. This is to ensure that:

- The new safe working method is being correctly followed and applied. If it is not, then supervision must be improved.
- The method is, in fact, safe. If it is not, then it will have to be reviewed and amended accordingly.

## TOPIC FOCUS

Factors to be considered when developing a safe system of work:

- What is the task being undertaken? Analysis can be provided through job safety analysis (the SREDIM method mentioned earlier).
- What equipment and materials are required for the task? These will present their own hazards, which need to be controlled.
- Who will be carrying out the work? How many people are working? What is their experience/knowledge level? Are there vulnerable persons?
- What are the hazards associated with the job?
- What controls are recommended by the manufacturer?
- What emergency provision is in place?
- Are the control measures adequate or are additional controls needed?
- How will the system of work be monitored?

## SPECIFIC EXAMPLES OF SAFE SYSTEMS OF WORK

### Working in Confined Spaces

A confined space can be defined as "any place such as a chamber, tank, vat, silo, pit, well, pipe, sewer, flue, or similar, in which by virtue of its enclosed nature there is a foreseeable risk of:

- Fire or explosion.
- Loss of consciousness or asphyxiation arising from gas, fumes, vapour or lack of oxygen.
- Drowning.
- Asphyxiation as a result of entrapment in free-flowing solid.
- Loss of consciousness as a result of high air temperature."

Note that a confined space has two characteristics:

- An enclosed nature (ventilation will be restricted and access/egress - getting in and out - may be difficult).
- One or more of the foreseeable specified risks exist.

Remember that a confined space does not have to be small; an empty oil-storage tank can be big enough to play a game of football inside, but it is still a confined space because of its enclosed nature and the risk of fire, asphyxia and drowning (as a result of an inflow of oil or other liquid while people are working in the tank, e.g. an in-feed pump might be accidentally switched on).

# Developing and Implementing Safe Systems of Work



Entry into a sewer would be considered confined space entry

## TOPIC FOCUS

Since work in confined spaces is a high-risk work activity there are some general principles that should always be applied:

- Do not work inside a confined space if it is possible to do the work in some other way.
- If confined space entry is the only way to do the work then a competent person must carry out a risk assessment.
- A safe system of work must be developed for the confined space entry.
- Emergency arrangements must be put in place as a part of that safe system of work.
- Confined space entry must be under permit-to-work control only.
- All personnel must be trained.

When developing the safe system of work for confined space entry the competent person will have to decide on the appropriate:

- Level of supervision.
- Competency requirements of the people doing the work.
- Communication methods to be used inside the confined space.
- Atmospheric testing and monitoring before and during entry.
- Ventilation that may be required before and during entry.
- Removal of residues.
- Isolation and lock off of in-feeds and out-feeds (pipes, etc.)
- Isolation and lock off of electrical and mechanical hazards.

- PPE requirements for workers inside the confined space which may include respiratory protective equipment.
- Safe and quick access and egress methods.
- Fire prevention measures.
- Lighting, which is suitable and safe to use in the atmosphere inside the confined space.
- Individuals, in terms of body size and psychology.
- Emergency and rescue arrangements to cope with foreseeable emergencies.

## Lone Working

Lone workers might be defined as “workers who are separated from their work colleagues”. Many people carry out their work in this way, perhaps all the time or on a regular or occasional basis, e.g. sales representatives; installation, repair and maintenance staff; cleaners and night security workers, etc. Note that a lone worker may not, in fact, be alone: they may be surrounded by people, who are not their work colleagues but others, such as members of the public, or customers.

The hazards that a lone worker may encounter will be the same as those of their colleagues working together, but the risks may be higher because:

- They don't have help to do the work, and to cope if things go wrong.
- Communication with colleagues and management is more difficult.

## TOPIC FOCUS

To manage the risks associated with lone working a risk assessment must be carried out and a safe system of work developed.

Various control measures may have to be implemented in the safe system of work:

- No lone working for certain high-risk activities (such as confined space entry).
- Arrangements for remote supervision.
- Procedures for logging workers' locations when lone working.
- The use of mobile phones or radios to ensure good communications.
- The provision of lone-worker alarm systems to raise the alarm and pin-point the worker.
- Procedures to be adopted by workers when lone working.
- Emergency procedures.
- Training for workers in those procedures.



A worker in a remote location uses a radio to ensure good communication

### Working and Travelling Abroad

There are various risks associated with working and travelling abroad, most notably relating to security and health. Working abroad is not the same as going on holiday - it is a change of workplace, and with that comes additional hazards. While travelling the worker may also be "lone working" and, as such, adequate controls should be in place to manage these risks too.

Organisations that send employees abroad have a duty to manage the health and safety aspects of the work in exactly the same way as all other undertakings. The organisation should develop a policy on international travel and specify the arrangements that will be made.

One of the biggest risks associated with international travel is that to personal health. It is essential that up-to-date advice is obtained before travelling. Some of the precautions that may need to be considered are:

- Vaccination.
- Pre-trip medical examination.
- Medical insurance.
- Training on personal health care.
- Emergency medical provision.
- Post-trip medical check-up.

#### MORE...

<http://www.hse.gov.uk/pubns/indg258.pdf>

<http://www.hse.gov.uk/pubns/indg73.pdf>

<http://www.suzylampugh.org>

### TOPIC FOCUS

Arrangements are likely to cover the following key topic areas:

- Pre- and post-visit briefings.
- Insurance arrangements.
- Personal health advice and vaccinations.
- Financial arrangements.
- Personal security training and advice.
- Advice on cultural differences and requirements.
- Accommodation.
- In-country travel.
- Emergency arrangements.
- 24-hour organisation contacts.

### REVISION QUESTIONS

15. Define a safe system of work.
  16. How does involving employees in the development of safe systems of work contribute to strengthening the safety culture?
  17. What is the difference between technical, procedural and behavioural controls?
  18. Why do instruction, training and supervision form a part of safe systems?
- (Suggested Answers are at the end.)



# Permit-to-Work Systems

## KEY INFORMATION

- Permit-to-work systems form part of a safe system of work to control high-risk work activities, such as hot work.
- A permit system formalises the control of high-risk work to ensure that all the risks have been identified, all the precautions put in place and that appropriate information has been communicated to all relevant parties.
- A permit-to-work usually has four main sections:
  - Issue.
  - Receipt.
  - Clearance.
  - Cancellation.
- Permit-to-work systems rely on the use of paper permits, but ultimately they only control risk properly when correctly used.
- Permits-to-work are typically used to control hot work, work on live electrical systems, some forms of machinery maintenance work, confined spaces and work at height.

## DEFINITION

A permit-to-work (PTW) system is a formal, documented safety procedure, forming part of a safe system of work, which ensures that all necessary actions are taken before, during and after particularly high-risk work.

The high-risk nature of the work is the key feature that these types of work have in common, which makes them subject to permit control. If the work is not carried out in precisely the right way then workers and others may be killed. The aim of the permit system is to focus everybody's attention on the high-risk nature of the work to ensure that:

- The correct safety precautions are in place before, during and after the work.
- All the people who need to know about the work do actually know about it.

## TOPIC FOCUS

The sort of high-risk work that would normally be controlled by a permit system includes:

- Hot work (involving naked flames or creation of ignition sources).
- Work on high-voltage electrical systems.
- Confined space entry.
- Work on operational pipelines.
- Excavating near buried services.
- Maintenance work on large, complex machinery.
- Work at height.

## OPERATION AND APPLICATION

A permit-to-work system is a management system that is supported by, and makes use of, permits-to-work (which are pieces of paper). Permits-to-work are formal documents specifying the work to be done, hazards, and the precautions to be taken. The permit provides a clear written record, signed by a responsible manager or supervisor, that all foreseeable hazards have been considered and all the necessary actions have been taken. It must be in the possession of the person in charge of the work before work can commence.

## TOPIC FOCUS

There are four main sections to a permit-to-work:

- Issue.
- Receipt.
- Clearance/return to service.
- Cancellation.

There may also be a section for Extension.

Permits are usually triplicate-copy documents with a unique identification number for cross-reference purposes. The sections of a permit-to-work operate in the following way.



## Issue

This section of the permit defines the work, identifies the hazards and determines the necessary safety precautions.

An authorising manager must complete this section. This will require them to carry out a risk assessment of the work in order to identify all the relevant hazards and precautions. The manager must be competent to do this. The authorising manager must specify:

- The exact nature of the work.
- Where the work can take place.
- The names of each of the workers authorised to carry out the work.
- The date and time that work can start.
- The period of time the permit is valid for.
- The control measures that must be in place before, during and after the work.
- Any restrictions.
- Any other permits that may be relevant.

The authorising manager signs the permit to formally confirm that all necessary precautions have been taken and that work can now start, providing the necessary precautions are adhered to. The manager's name and signature, and the date and time should be clear.

## Receipt

Here the handover process to allow work to start is formalised.

The workers sign the permit to formally confirm that they understand all the hazards, risks and precautions and that they will comply with all necessary control measures.

Names should appear clearly in capital letters with signatures, dates and times.

## Clearance/Return to Service

The workers sign this section of the permit to confirm that they have left the workplace in a safe condition, that work is complete and that normal operations may resume.

## Cancellation

The authorising manager signs this section to accept the hand-back of the workplace from the workers. This also has the effect of cancelling the permit so that no further work can take place under its authority.

## Extension

This section is included in some permit systems in case there is any overrun of the work. It allows the authorising manager to grant an extension to the timescale of the permit.

Permits are often issued in triplicate:

- One copy is displayed in the area where the work is taking place.
- One copy stays with the authorising manager.
- One copy is displayed in a central location (often on a permit board) where other permits are also displayed for clear communication.

## TOPIC FOCUS

The general details to be included in a permit-to-work system can be summarised as:

### Issue

- Description of the work to be carried out (details of plant and location).
- Assessment of hazards associated with the job.
- Controls required, including:
  - Additional permits.
  - Isolation of services and supplies.
  - PPE.
  - Atmospheric monitoring, etc.
  - Emergency procedures.

### Receipt

- Signature of the authorised person issuing the permit.
- Signature of the competent person accepting the permit (known as "signing onto the permit", or "receipt").

### Clearance

- Signature of the competent person stating that the area has been made safe (e.g. work completed) and that they are leaving the area and isolations can be removed (known as "sign off" from the permit, or "clearance").

### Cancellation

- Signature of the authorised person stating that the isolations have been removed, the area has been accepted back and that the equipment can be restarted (known as "cancellation" of the permit).

# Permit-to-Work Systems

## LIMITATIONS OF THE PERMIT-TO-WORK SYSTEM

Remember that a permit-to-work is just a piece of paper; it does not ensure safety. What ensures safety is the management system that it represents. In some cases, permits are treated simply as unnecessary paperwork - to be filled in because someone at head office says so. This can encourage casual practices, such as authorising managers to issue permits without actually checking that control measures have been put in place, which can lead to unfortunate consequences.

A good permit system is only as good as the persons using it. To work effectively:

- Only authorised persons should issue permits.
- Permit issuers must be familiar with the hazards of the workplace and the job to be carried out.
- Precautions must be checked before permits are authorised (no issuing of permits from the office!)
- Permits must never be amended.
- All permit conditions must be adhered to.
- Staff must be trained and competent.
- The system must be monitored to ensure it is effective.
- The PTW system must be appropriate for the nature of the business, e.g. a bakery may require a less complex system than an oil rig.
- Sufficient time must be allowed to ensure permits are issued correctly, and staff trained to understand this. Contractors, for example, may become stressed if the process is time-consuming, but must understand that they are required to adhere to the system.

## TYPICAL PERMIT SYSTEMS

### Hot Work

Permit systems are commonly used to control hot work where naked flames will be used (e.g. propane, butane or oxyacetylene torches) or where a significant ignition source will be created (e.g. welding or grinding operations).

Typical precautions for control of hot work:

- Flammable materials are removed from the work area.
- Items that cannot be removed are covered with fire-retardant blankets.
- Floor is swept clean.
- Wooden floor is damped down.
- A suitable fire extinguisher is at hand.
- A "fire-watcher" is present in the area.
- The work area is visited routinely after the work has finished to check the area for smouldering.



Cutting with an oxyacetylene torch requires a permit-to-work

### Work on Live Electrical Systems

The high risk associated with working on or near live electrical systems means that this type of work is usually subject to permit control. In particular, permits are usual for work on or near high-voltage systems.

A permit system is used to ensure that:

- Working live is justified (i.e. it is not possible to work with the power off).
- All precautions are in place.
- The workers are competent to do the work.

## Machinery Maintenance

Maintenance work often involves the removal or disabling of safeguards and control systems. For large, complex industrial machinery more than one person may be involved in the work and they may be required to work inside the machinery. This can generate high risk that might be best controlled using a permit system.

A permit system is used to ensure that:

- Work is carefully planned, assessed and controlled.
- The nature of the work is communicated to those who need to know about it.
- Power sources are isolated and locked off.
- Stored energy is released or secured.
- The workers are competent to do the work.

## Confined Spaces

Entry into confined spaces can be extremely hazardous, so should always be under the control of a permit-to-work system. This will require a competent person to carry out a risk assessment and then develop a safe system of work, which identifies all the necessary precautions for entry and the emergency arrangements that must be put in place.

## Work at Height

A large proportion of workplace fatalities are caused by falls from height; this is considered a high-risk activity and is often covered by a permit-to-work. The permit system will be used to ensure that the following factors are taken into consideration:

- Avoid working at height if possible.
- Prevent falls by providing a safe workplace, e.g. a platform with adequate edge protection.
- Minimising the distance and consequences of falls using PPE to limit falls, or safety devices, e.g. nets to "catch" anyone who does fall.
- Weather conditions, e.g. high wind, ice.

### REVISION QUESTIONS

19. What is a permit-to-work?
20. What are the four key elements of a typical permit?
- (Suggested Answers are at the end.)

## SUMMARY

This element has dealt with topics relating to the Planning element of health and safety management systems.

In particular it has:

- Explained the importance of setting SMART health and safety objectives (specific, measurable, achievable, reasonable, timebound).
- Defined the terms “hazard” (something with the potential to cause harm), “risk” (the likelihood that a hazard will cause harm in combination with the severity of outcome), and “risk assessment” (a formalised process of identifying hazards, assessing the risk they generate and then either eliminating or controlling the risk).
- Identified the aim of risk assessment - to ensure that hazards are eliminated or risk is minimised by the correct application of relevant standards.
- Explained the five-step approach to risk assessment:
  1. Identify the hazards.
  2. Identify the people who might be harmed and how.
  3. Evaluate the risk and decide on precautions.
  4. Record the significant findings and implement them.
  5. Review and update as necessary.
- Considered that hazards can generate risk to both safety and health and can be identified by various methods, including task analysis, legislation, manufacturers’ information and incident data.
- Considered the general principles of prevention that can be applied to hazards in the workplace.
- Explained the general hierarchy of controls, which rely on the correct selection of technical, procedural and behavioural controls.
- Noted several of the internal and external sources of health and safety information that are available.
- Defined “safe systems of work” as formal procedures based on a systematic examination of work equipment and processes to identify the hazards involved and define safe methods of working to eliminate or minimise risk.
- Identified the role of both competent persons and workers in developing and documenting these safe systems.
- Outlined the process of task analysis, where a task is broken down into a series of steps so that hazards can be identified and risk controlled at each step. This safe working method must then be implemented and monitored.
- Explained the relevance of safe systems of work to confined space entry, lone working and working and travelling abroad.
- Outlined permit-to-work systems as a way of formalising the control of high-risk activities.
- Explained the Issue, Receipt, Clearance and Cancellation sections typical of a permit-to-work and outlined the use of permits in the control of hot work, work on electrical systems, machinery maintenance, confined spaces and work at height.



## QUESTION

- (a) **Give** the meaning of the term 'risk' **AND give** a workplace example. (3)
- (b) **Identify** the key stages of a risk assessment. (5)

### APPROACHING THE QUESTION

Think now about the steps you would take to answer the question:

- The first step is to read the question carefully. This time you have been asked to "give" the meaning in part (a) - NEBOSH define this as "provide without explanation". Part (b) requires you to "identify" the stages of a risk assessment - you will remember that this is, in NEBOSH terms, "select and name".
- Next, consider the marks available. As always for this type of question there are eight marks available, split this time as three for part (a) and five for part (b). It's probable that you would gain two marks in part (a) for the meaning of risk and one mark for a suitable example. For part (b) you should probably aim to provide five pieces of information.
- Now highlight the key words. In this case they might look like this:
 

(a) **Give** the meaning of the term 'risk' **AND give** a workplace example. (3)

(b) **Identify** the key stages of a risk assessment. (5)

- Read the question again to make sure you understand about risk and risk assessments. (Re-read your notes if you have to.)
- The next stage is to develop a plan - you are now familiar with how to do this.

The answer plan will take the form of a bullet-pointed list that you need to develop into a full answer based on the key words that you have highlighted.

Now have a go at the question. Draw up an answer plan, and then use it as the basis to write out an answer as you would in the exam.

**Key hint:** in part (b) you are asked for the key stages of risk assessment, and the marks available suggest five pieces of information are needed - this in itself is a big clue!

When you have finished, compare your plan and full answer with those that follow.

### SUGGESTED ANSWER

Plan

Risk (Meaning)	Risk Assessment (key Stages)
<ul style="list-style-type: none"> <li>Combining the likelihood of harm occurring and the potential severity of the harm.</li> <li>Example: faulty electrical equipment.</li> </ul>	<ul style="list-style-type: none"> <li>Identify the hazards.</li> <li>Identify who could be harmed and how (including workers, visitors, contractors, vulnerable groups).</li> <li>Evaluate risk and decide on precautions.</li> <li>Record the significant findings and implement them.</li> <li>Review and update as necessary.</li> </ul>

Now have a go at the question yourself.





## POSSIBLE ANSWER BY EXAM CANDIDATE

- (a) *Risk is determined by considering the likelihood of harm occurring and the potential severity of harm, damage or loss. For example, if working with faulty, mains-powered electrical equipment, there is high probability that an electric shock could be received, and the potential result is death.*
- (b) *The HSE have identified the following five steps to risk assessment:*
- 1. Identify the hazards.*
  - 2. Identify who could be harmed and how (including workers, visitors, contractors, vulnerable groups such as young persons, pregnant workers and the disabled).*
  - 3. Evaluate the risk (considering likelihood and severity of harm) and decide on precautions.*
  - 4. Record the significant findings and implement them.*
  - 5. Review and update as necessary.*

## REASONS FOR POOR MARKS ACHIEVED BY CANDIDATES IN EXAM

- Many candidates confused hazard and risk. A hazard is something with the potential to cause harm. Electricity is a hazard. The example above shows how the knowledge that a hazard is present is used to assess the risk (what could happen and how likely it is to happen).
- Candidates who were familiar with the recommended five steps to risk assessment approach would have had no problems with part (b), though many candidates seemed not to understand this approach.

## HEALTH AND SAFETY MANAGEMENT SYSTEMS 4 – MEASURING, AUDIT AND REVIEW

ELEMENT

5



### LEARNING OUTCOMES

On completion of this element, you should be able to demonstrate understanding of the content by applying what you have learnt to familiar and unfamiliar situations. In particular, you should be able to:

- 1 Outline the principles, purpose and role of active and reactive monitoring.  
.....
- 2 Explain the purpose of, and procedures for, health and safety auditing.  
.....
- 3 Explain the purpose of, and procedures for, investigating incidents (accidents, cases of work-related ill-health, and other occurrences).  
.....
- 4 Describe the legal and organisational requirements for recording and reporting incidents.  
.....
- 5 Explain the purpose of, and procedures for, regular reviews of health and safety performance.  
.....

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# Active and Reactive Monitoring

## KEY INFORMATION

- Active monitoring is about checking to ensure that standards are met and that the workplace is, in fact, safe and free of health risks before any unwanted event takes place.
- Safety inspections, sampling, surveys and tours are four active monitoring methods that can be used to check conformance to standards.
- Workplace inspections play an important role in active monitoring. Various factors must be considered when setting up an inspection system, such as:
  - Type of inspection.
  - Frequency of inspection.
  - Responsibilities for inspection.
  - Competence of the inspector.
  - Use of checklists.
  - Action planning for problems found.
- If an inspection report is written, then it must be effective. This requires an appropriate writing style, structure, content and the use of persuasive argument to justify recommendations.
- Reactive monitoring is about measuring safety performance by reference to accidents, incidents and ill-health that have already occurred. Reactive measures therefore include measures of incident types and frequency rates, sickness-absence rates, number of reported near-miss events and property damage incidents, etc. The number of enforcement actions taken and number of civil claims can also be considered reactive measures.

Health and safety performance should be monitored. This can be done using various methods that fall into two broad categories:

- **Active monitoring** – to ensure that health and safety standards are correct in the workplace before accidents, incidents, or ill-health are caused.
- **Reactive monitoring** – using accidents, incidents and ill-health as indicators of performance to highlight areas of concern.

In most workplaces both types of monitoring are useful. Monitoring should be a line-management function, but remember that senior management has responsibility for ensuring that effective health and safety performance monitoring systems are in place.

## ACTIVE MONITORING

Active monitoring is concerned with checking standards before an unwanted event occurs. The intention is to identify:

- Conformance with standards, so that good performance is recognised and maintained.
- Non-conformance with standards, so that the reason for that non-conformance can be identified and corrective action taken.

There are many different ways of actively monitoring health and safety performance. We will outline some of them in the following sections.

## Performance Standards

In order to actively monitor performance standards you have to identify exactly which performance standard to monitor and what level of performance is acceptable.

You could actively monitor the following activities to give a measure of performance:

- Number and quality of risk assessments covering work activities.
- Provision of health and safety training to schedule.
- Completion of consultative committee meetings to schedule.
- Completion of workplace inspections to schedule.
- Completion of safety review meetings to schedule.

All these management activities are likely to be taking place in the workplace, so it is possible to assess whether they are happening or not. In most instances you can also measure the degree to which they are happening and perhaps assess their quality. For example, a standard might be that when contractors start new work on site there should be suitable and sufficient risk assessments to cover their work. The presence or absence of risk assessments can be checked. The number of risk assessments can be measured to quantify compliance. The quality of each risk assessment can be judged. In this way, a full picture of compliance can be built up.



# Active and Reactive Monitoring

## Systematic Inspections

One popular way to actively monitor health and safety performance is to carry out systematic inspections. These inspections can focus on the four Ps:

- **Plant** – machinery and vehicles, as well as any statutory inspections and examinations.
- **Premises** – the workplace and the working environment.
- **People** – working methods and behaviour.
- **Procedures** – safe systems of work, method statements, permits-to-work, etc.

An inspection might concentrate on one, several or all four of these areas. Systematic inspection regimes usually exist in many different forms within different workplaces.

For example, in a distribution warehouse there might be:

- A **daily** inspection regime, where forklift-truck drivers inspect their own vehicles at the start of each shift – **Plant**.
- A **weekly** inspection regime, where supervisors check that forklift trucks are being driven safely – **People**.
- A **monthly** inspection regime, where the manager checks the entire warehouse for housekeeping – **Premises**.
- A **six-monthly** thorough examination of each forklift truck by a competent engineer to ensure safety of the load-bearing parts – **Plant**.
- An **annual** inspection regime for the storage racking to ensure structural integrity – **Premises**.

If this series of inspections is in place then it is possible to monitor the degree to which each is being carried out successfully. In this way, two different types of active monitoring are being carried out: one on the workplace directly (the 4 Ps), and one on the performance of those checks.



Weekly inspection by a site supervisor

## SAFETY INSPECTIONS, SAMPLING, TOURS AND SURVEYS

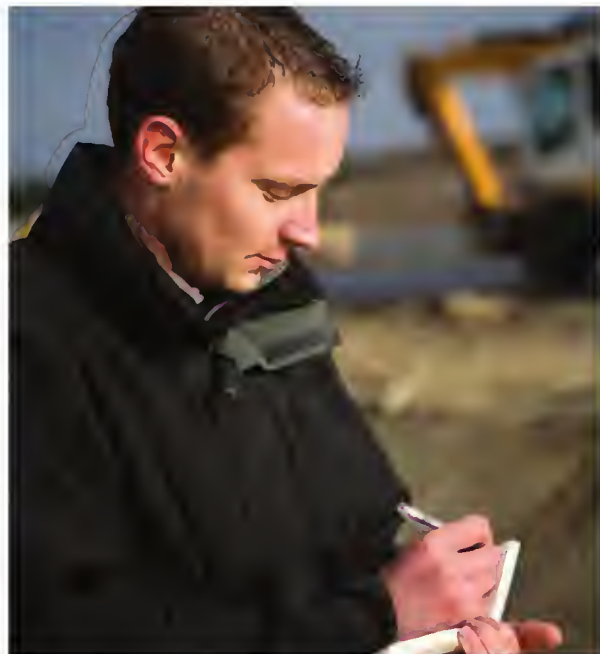
These are four slightly different methods of active monitoring, each of which has a place in an active monitoring regime. (Remember that the actual names given to these methods may vary between workplaces.)

### Safety Inspections

The term “safety inspection” means a regular, scheduled activity, with comparison to accepted performance standards. It can be applied to:

- The **routine** inspection of a workplace to determine if general standards of health and safety are acceptable, or if corrective action is necessary (e.g. a quarterly housekeeping inspection in an office).
- The **statutory** inspection of an item by a competent person to fulfil a legal requirement (e.g. the annual thorough examination of an item of lifting equipment).
- The **periodic** inspection of plant and machinery as part of a planned maintenance programme (e.g. a mechanic inspects the brakes on a lorry on a regular basis to ensure they are not excessively worn).
- The **pre-use checks** carried out by workers before they use certain items of plant and machinery (e.g. the start-up checks carried out by a forklift-truck driver).

All these inspections can be repeated routinely to form an inspection regime, and can all be recorded to provide evidence of inspection.



Workplace safety inspection



## Safety Sampling

This is the technique of monitoring compliance with a particular workplace standard by looking at a representative sample only. If a big enough sample is collected then there is a strong likelihood that the results of the sample will reflect the results for the workplace as a whole.

For example, if the standard in a large office complex is that all 1,200 fire extinguishers must be inspected annually by a competent engineer, then there are several ways to monitor this standard:

- Check the maintenance records to ensure each and every fire extinguisher has been signed off.
- Check all 1,200 fire extinguishers directly by inspecting every one.
- Check a representative sample of, say, 50 extinguishers selected at random from various locations around the complex.

The last method is safety sampling. It provides better evidence of compliance to the standard than simply checking the engineer's maintenance records, since they may have signed extinguishers off without ever inspecting them. It is also far less time-consuming and onerous than checking all 1,200 extinguishers directly.

## Safety Surveys

A safety survey is a detailed examination of one particular issue or topic, e.g. a detailed examination of the provision of emergency lighting within a building. The word "survey" can be used to refer to various types of detailed examination:

- Environmental monitoring is a form of safety survey, e.g. a noise assessment usually requires that a noise survey is carried out by a competent person using a sound-level meter.
- A structural survey is a detailed examination of the structural integrity of a building or item.
- A staff survey is an examination of workers' opinions, usually collected by asking staff to fill in a questionnaire.

All of these types of survey might be used to actively monitor safety.

## Safety Tours

A safety tour is a high-profile inspection of a workplace carried out by a group or team, including managers. The tour may be formal, but can also be informal - a walk-around looking at points of interest (usually unscheduled). The group carrying out the tour should include managers from the area being inspected and possibly worker representatives, safety specialists, occupational health specialists, engineers and workers from the area. One of the objectives of the tour is to raise the profile of health and safety and to demonstrate management interest and commitment. Safety observation tours can also be used to monitor the way that workers are behaving – these are known as behavioural observations. Once behaviours are observed, feedback (positive and negative) is given to the worker so that the organisation and operator can learn from the process.

## ARRANGEMENTS FOR WORKPLACE INSPECTIONS

Certain factors must be considered before a workplace inspection system is introduced, including:

- The **type of inspection** – inspections are carried out for a number of different reasons and they examine different aspects of safety in the workplace. Is this a statutory inspection to ensure legal compliance? A general workplace inspection that looks at plant and premises? A pre-start inspection for an item of machinery?
- The **frequency of inspection** – likely to be determined both by the type of inspection and the level of risk. For example, a general workplace inspection might be conducted in an office once a month, but once a week in a workshop environment to reflect the higher risk. The frequency of statutory inspections is normally determined by the relevant law. Pre-start checks should usually be carried out at the start of every shift.
- **Allocation of responsibilities** – those responsible for ensuring that inspections take place should be identified, as should the employees who will be carrying out the inspections.
- The **competence and objectivity of the inspector** – an essential characteristic of whoever is conducting the inspection; the person should have the necessary training, knowledge and experience. In some instances, certification to a specific standard will be required. In other situations all that is necessary is an understanding of the workplace, health and safety principles, and a willingness to ask questions. An inspector also needs to be impartial and objective in their approach, even when looking at an area that they are very familiar with. Training may be required for those who will be conducting inspections.
- The **use of checklists** – these are valuable tools for use during the inspection process. Checklists ensure that:
  - All points are covered by the inspector.
  - There is a consistency of approach to the process.
  - There is a form of written record of the inspection and its findings.

However, checklists do have their weaknesses, the most important being that an inspector might only deal with the points on the checklist and ignore other issues that exist in the workplace but are not included on the checklist.

# Active and Reactive Monitoring

- Action planning for problems found – so that appropriate action is taken following the inspection to resolve issues in a timely manner. An inspection system that identifies a problem or issue but then does not result in action being taken is a flawed system. There must be clear identification of the:
  - Corrective action required.
  - Persons responsible for taking that action.
  - Priorities/timescales.

The inspection system can be documented and formalised once procedures based on all these factors have been agreed upon.

## TOPIC FOCUS

Factors to take into account when determining the frequency of inspections:

- Statutory requirements may dictate an inspection frequency.
- The activities carried out and the level of risk.
- How well established the process is, e.g. new equipment may require more frequent monitoring.
- Risk assessments may suggest inspections as a control measure.
- Manufacturers may make recommendations in relation to inspection frequency and content.
- The presence of vulnerable workers, e.g. young and inexperienced people.
- Findings from previous inspections, which may suggest compliance concerns.
- Accident history and results of investigations.
- Enforcement authorities may recommend inspections.
- Whether workers have voiced concerns.

## Example Inspection System

The head office of a bank introduces an inspection system to actively monitor general health and safety standards. A set of formal arrangements is documented and included in the safety policy of the company. These arrangements describe:

- The **purpose** of the inspection system – to monitor general health and safety standards.
- The **frequency** of the inspections – once a month for all areas.
- **Competence of inspectors** – the need for inspecting managers to attend a one-day course on the inspection system.

- The **persons responsible** – managers of a particular grade for ensuring that inspections are carried out, managers of the next grade down for actually doing the inspections.
- **Inspection checklist** – a generic checklist that is appropriate to all office areas, which may be tailored by the inspector if necessary.
- **Follow-up arrangements** – an action plan table is created and included on the inspection checklist.

## TOPIC FOCUS

Typical topic headings that might be included in a generic inspection checklist:

- **Fire safety** – including emergency escape routes, signs, extinguishers.
- **Housekeeping** – general tidiness and cleanliness.
- **Environment issues** – such as lighting, temperature, ventilation, noise.
- **Traffic routes** – safety of both vehicle and pedestrian routes.
- **Chemical safety** – appropriate use and storage of hazardous substances.
- **Machinery safety** – such as correct use of machine guards and interlocks.
- **Electrical safety** – such as portable electrical appliance safety.
- **Welfare facilities** – their suitability and condition.

## EFFECTIVE REPORT WRITING

Many inspection systems require the inspector to write a report summarising their main findings and recommendations. In some cases this report is presented in a standard pro-forma style, where the inspector simply fills in blank spaces on a report form. In other instances, a more narrative-style report is required where the inspector has much wider scope to explain and describe what they found and what they recommend should be done about it. If this sort of inspection report is written, then it must be effective. This requires an appropriate writing style.

### • Writing Style

The language used in the report must be formal and free of slang and jargon. The tone of language must be factual and persuasive. The report must be concise. Busy managers do not have time to read long, rambling sections of text.



Worker completing an inspection report

#### • Structure

A typical report structure is:

- Executive summary – a concise overview of the main findings and recommendations.
- Introduction – a few sentences to outline where and when the inspection took place, who was present and the reasons for the inspection.
- Main findings – this can perhaps be divided up into specific topic areas. For each topic the problem highlighted can be described in a factual manner and any relevant legal standard identified.
- Recommendations – the immediate, medium and long-term actions needed to remedy each of the issues found should be identified, along with timescales and responsible persons. Actions should be prioritised on the basis of risk. Justification of the recommendations should be included.
- Conclusions – a short section to end the report.

#### • Content

The significant findings of the inspection should be presented. Trivia and minor issues should be omitted. The report must be factual and concise. Evidence of what was observed might be presented.

#### • Justified Recommendations

Any recommendations made should be justified. A persuasive argument might be made based on the moral, legal and economic arguments. Recommendations might be presented in an action plan:

Recommended action	Priority	Timescale	Responsible person
Tidy the office	Medium	1 Week	Office Supervisor

## OTHER ACTIVE MONITORING TECHNIQUES

### Health Surveillance

Monitoring worker health can be considered an active monitoring measure, as measuring things like hearing can indicate the effectiveness of controls.

### Benchmarking

You will remember that the comparison of an organisation's performance with others in the industry or sector is known as "benchmarking". This provides an indication of how well the organisation is performing compared to similar companies.

## REACTIVE MONITORING

Reactive monitoring uses incidents, ill-health and other unwanted events and situations as indicators of health and safety performance to highlight areas of concern. By definition, this means "reacting" after things have gone wrong. This indicates two weaknesses with reactive monitoring:

- **Things have already gone wrong:** things are being put right after the event rather than before.
- **It measures failure,** which is a negative aspect to focus on.

Despite these weaknesses, reactive monitoring is a valid tool for an organisation to use as long as some forms of active monitoring are being carried out as well. Reactive monitoring can be carried out by learning lessons:

- From one individual event, such as an accident, a dangerous occurrence, a near miss, or a case of ill-health.
- From data gathered from large numbers of the same types of event.

The first method involves event reporting, recording and investigation (see later in this element). The second method is concerned with the collection and use of statistics.

### Statistics

Data can be collected and reported about a number of different unwanted events, such as:

- Accidents.
- Dangerous occurrences.
- Near misses.
- Cases of ill-health.
- Complaints from the workforce.
- Enforcement action.

This data can then be analysed to see if there are any:

- **Trends** - consistent increases or decreases in the number of certain types of event over a period of time.
- **Patterns** - collections or hot-spots of certain types of event.

# Active and Reactive Monitoring

This analysis usually involves converting the raw data (i.e. the actual numbers) into an **accident rate** so that more meaningful comparisons can be made.

One popular accident rate used to measure an organisation's safety performance is the **Accident Incidence Rate (AIR)**:

$$\text{AIR} = \frac{\text{Number of accidents during a specific time period}}{\text{Average number of workers over the same time period}} \times 1000$$

(The answer is in units of 'accidents per 1000 workers'.)

This allows meaningful comparison of accident statistics from one year to the next even though more or fewer workers may be present in the workplace.

## Example

A large factory has 20 lost-time accidents in one year but 35 lost-time accidents the next. This appears to represent an increase of 75%, indicating that the factory's safety standards have slipped and it has become a more dangerous place to work.

However, when the number of workers employed in the factory is taken into account and the AIR for each year is calculated:

**Year 1:** 800 workers:

$$\text{AIR} = \frac{20}{800} \times 1000 = \mathbf{25 \text{ lost-time accidents per 1000 workers}}$$

**Year 2:** 1500 workers:

$$\text{AIR} = \frac{35}{1500} \times 1000 = \mathbf{23 \text{ lost-time accidents per 1000 workers}}$$

The accident rate for both years is actually very similar, so the original conclusion was incorrect. The workplace has not become more dangerous; the increase in the number of accidents occurred because more people now work in the factory.

Of course, statistics do sometimes show a false picture of what is happening in the workplace and there are times when they can be deliberately manipulated to present a desired result. Statistics should always be used and interpreted carefully to ensure that what the data seem to be showing is what is actually happening. For example, after a training course on accident reporting has been delivered to staff, the accident rate increases dramatically. This seems to indicate that more accidents are occurring. In fact, the same number of accidents is happening as has always happened, but now all the accidents are being reported, recorded and seen by management. The increase is caused by improved reporting, which, in turn, has been caused by better awareness of the reporting procedures created by the training course.

## Enforcement Actions

The number of enforcement actions taken against an organisation is an indication of health and safety performance, and these data are often required in qualification questionnaires that need to be filled out when tendering for work.

Many organisations track the number and value of civil claims (for compensation) as a reactive measure – as with all measures this is, of course, only part of the picture, as there are many reasons why an employer might see an increase in claims (e.g. advertising from legal organisations highlighting the possibility of making a claim, dissatisfaction with the company as a whole), while active defence of claims may discourage others from bringing such action.

## REVISION QUESTIONS

1. Define reactive and active monitoring.
2. What do we mean by systematic monitoring?
3. Identify the sources of information used in reactive monitoring.
4. Identify the purpose of workplace inspections.
5. What is the difference between a safety inspection and a safety tour?
6. What role does senior management have in workplace inspections?
7. Why are checklists used in inspections?
8. What should the introductory part of an inspection report contain?

(Suggested Answers are at the end.)



# Health and Safety Auditing

## KEY INFORMATION

- Auditing is the systematic, objective, critical evaluation of an organisation's health and safety management system.
- Preparations have to be made before an audit commences.
- During an audit three different types of evidence will be sought: documents and records, interviews, and direct observation in the workplace.
- Audit reports feed information back into the review process so that action can be taken for continuous improvement.
- Audits can be conducted by external personnel and by internal staff. There are strengths and weaknesses in both approaches.

## DEFINITION OF HEALTH AND SAFETY AUDITING

Auditing can be defined as:

*"The structured process of collecting independent information on the efficiency, effectiveness and reliability of the total health and safety management system and drawing up plans for corrective action."*

A shorter definition might be that auditing is the "systematic, objective, critical evaluation of how well an organisation's management system performed by examining evidence". Health and safety audits share many common features with financial, quality and environmental management audits; the basic principles are the same.

## SCOPE AND PURPOSE OF AUDITING

Auditing is a mechanism for verifying that an organisation's safety management system is in place and operating effectively. It will check that:

- Appropriate management arrangements are in place.
- Adequate risk control systems exist - that they are implemented, and are consistent with the hazard profile of the organisation.
- Appropriate workplace precautions are in place.

The intention of an audit is to provide critical feedback on the management system so that appropriate follow-up action can be taken. An audit can, therefore, be viewed as negative, since it will tend to focus on areas of weakness and non-conformance. In fact, some audits do not make any mention of any positive aspects of the safety management system at all; they focus entirely on the weaknesses. This is, however, inherent in the purpose of the audit – to identify weaknesses so that they can be dealt with. Auditing is often thought of as another form of active monitoring.

## The Distinction Between Audits and Inspections

An **audit** focuses on management systems:

- It examines documents such as the safety policy, arrangements, procedures, risk assessments, safe systems of work, method statements, etc.
- It looks closely at records such as those created to verify training, maintenance, inspections, statutory examinations, etc.
- It verifies the standards that exist within the workplace by interview and direct observation.

An **inspection** is a simpler process of checking the workplace for uncontrolled hazards and addressing any that are found.

## THE AUDIT PROCESS

Different audits are run in slightly different ways. What follows is a fairly typical audit process.



Auditor examining policy documents



# Health and Safety Auditing

## Pre-Audit Preparations

Before the audit starts the following should be defined:

- The scope of the audit – will it cover just health and safety, or environmental management as well?
- The area of the audit – one department, one whole site, all sites?
- The extent of the audit – fully comprehensive (which may take weeks), or more selective?
- Who will be required – auditors will need to be accompanied during their visit and will need access to managers and workers for information-gathering, therefore those required for interviews should be notified in advance.
- Information-gathering – it is common practice for auditors to ask for copies of relevant documentation before starting the audit so that they can prepare.

The organisation will have to ensure that the auditor is competent, i.e. that they have the relevant qualifications, experience and knowledge to do the job well. This can apply to both internal and external auditors. If internal staff are used as auditors sufficient time and resources will have to be allocated so that they can be trained and developed in that role.

All of these elements of the audit process require the allocation of sufficient management time and resources.

## During the Audit

Auditors use three methods to gather factual information:

- Reference to paperwork – the documents and records that indicate what should be happening and what has happened relevant to a particular issue.
- Interviews – word-of-mouth evidence given by managers and workers.
- Direct observation – of the workplace, equipment, activities and behaviour.

Auditors will sometimes seek to collect evidence so that their findings cannot be refuted; this can be done by copying paperwork, taking photographs and having a witness to corroborate word-of-mouth evidence.

An auditor's favourite phrases are: "Show me" and "Can you prove it?"

## TOPIC FOCUS

Typical information examined during an audit:

- Health and safety policy.
- Risk assessments and safe systems of work.
- Training records.
- Minutes of safety committee meetings.
- Maintenance records and details of failures.
- Records of health and safety monitoring activities, e.g. tours, inspections, surveys, etc.
- Accident investigation reports and data, including near-miss information.
- Emergency arrangements.
- Inspection reports from insurance companies, etc.
- Output from regulator visits, e.g. visit reports, enforcement actions, etc.
- Records of worker complaints.

## At the End of the Audit

Verbal feedback is usually provided at the end of an audit; for some audits this will involve a presentation to the management team. This verbal feedback will be followed by a written report. The report will make recommendations for improvement and indicate priorities and timescales.

## RESPONSIBILITY FOR AUDITS

It is the responsibility of the organisation to establish and implement health and safety auditing. There are circumstances when external authorities such as enforcement authorities or insurance companies will carry out audits; or an organisation may have to be audited in order to achieve or maintain certain certifications (e.g. OHSAS 18001 certification).

Once an audit has been carried out and feedback has been received in the form of recommendations for improvement it is the responsibility of management to ensure that the feedback is acted upon. This is normally done through the review process (see later) by creating action plans.

## EXTERNAL AND INTERNAL AUDITS

Audits are often carried out by safety specialists from outside the organisation. They can also be done by in-house staff. In many instances both types of audit are carried out at different frequencies by the organisation. There are advantages and disadvantages to both types.

	Advantages	Disadvantages
External Audits	<ul style="list-style-type: none"> <li>• Independent of any internal influence.</li> <li>• Fresh pair of eyes.</li> <li>• Already has audit experience.</li> <li>• May have wider experience of different types of workplace.</li> <li>• Recommendations often carry more weight.</li> <li>• May be more up to date with law and best practice.</li> <li>• May be more able to be critical, e.g. of management.</li> </ul>	<ul style="list-style-type: none"> <li>• Expensive.</li> <li>• Time-consuming.</li> <li>• May not understand the business and so make impractical suggestions.</li> <li>• May intimidate workers and so get incomplete evidence.</li> </ul>
Internal Audits	<ul style="list-style-type: none"> <li>• Less expensive.</li> <li>• Auditors already familiar with the workplace and what is practicable for the industry.</li> <li>• Can see changes since last audit.</li> <li>• Improves ownership of issues found.</li> <li>• Builds competence internally.</li> <li>• Workforce may be more at ease.</li> <li>• Familiarity with workforce and individuals.</li> </ul>	<ul style="list-style-type: none"> <li>• Auditors may not notice certain issues.</li> <li>• Auditors may not have good knowledge of industry or legal standards.</li> <li>• Auditors may not possess auditing skills so may need training.</li> <li>• Auditors are not independent so may be subject to internal influence.</li> </ul>

## ACTIONS TAKEN FOLLOWING AUDITS – CORRECTING NON-CONFORMITIES

After the audit the feedback and report may contain a number of findings that require action. These may be classified according to their significance. Here we indicate parallels with ISO systems, as many organisations have experience of them:

- **Major non-conformance** – a significant issue or breach, which requires urgent action. This could result in the failure of the safety management system and/or result in injury. In ISO terms, a major non-conformance would be grounds for refusing certification.
- **Minor non-conformance** – an issue that is less serious in nature and unlikely to result in injury or a breakdown of the system. In ISO terms, a minor non-conformance would require corrective action, but certification would be granted.
- **Observations** – an opinion given by the auditor, which the organisation could decide to act on.

The audit feedback session and report is usually presented to senior management for action and/or praise, as required. This is a demonstration of leadership and, in some cases, it is a requirement in the standards being audited. The management team have the authority and resources to take action where required, and may also need to adjust the organisational goals and objectives.

### MORE...

<http://www.ilo.org/safework/lang--en/index.htm>

## REVISION QUESTIONS

9. Define health and safety auditing.
10. Outline the differences between health and safety audits and workplace inspections.  
(Suggested Answers are at the end.)

# Investigating Incidents

## KEY INFORMATION

- Incidents should be investigated for several reasons, perhaps the most important of which is to discover the causes so that corrective action can be taken to prevent similar incidents from happening again.
- Incidents can be categorised in terms of their outcome: near miss, accident (injury and/or damage), dangerous occurrence and ill-health.
- Basic incident investigation procedure is to:
  - Gather factual information about the event.
  - Analyse that information to draw conclusions about the immediate and root causes.
  - Identify suitable control measures and then plan remedial actions.

Unfortunately, in spite of an organisation's best efforts, accidents do happen. When they happen, it is important that the incident is reported, recorded and investigated in an appropriate and timely manner.

## ROLE AND FUNCTION OF INVESTIGATIONS

When an accident, or some other type of incident, occurs in the workplace it should be investigated and the investigation recorded. Incident investigations are an example of a reactive monitoring measure.



A workplace accident

With regard to this point, remember the underlying message of the accident triangle we described in Element 4: near misses are an indicator of accident potential. Often the only thing that separates a near miss from an accident is luck (or chance). The place where one worker trips and stumbles on the steps one day may be the place where another worker will trip, fall and break their arm the next day. It follows that all incidents should be examined to determine the potential for serious harm, injury or loss so that action can be taken before a more serious injury occurs. It is also likely that if near-miss events are rigorously reported there will be a far greater number of events to consider, providing more data, which can help highlight the deficiencies in the safety management system. This is not to say that all incidents should be thoroughly investigated in great depth and detail - that would be a waste of time and effort in many cases - but that all incidents should be examined for potential so that a decision can be made as to whether a more detailed and thorough investigation is required. This idea is sometimes formalised into an organisation's investigation procedures.

There are many reasons for conducting investigations, but one of the most important is that having happened once, an accident may happen again; and when it happens again the outcome may be as bad as, or worse than, it was the first time. It is therefore important to understand exactly why the accident occurred so that corrective action can be taken to prevent a recurrence.

## TOPIC FOCUS

### Reporting incidents:

- To trigger the provision of first-aid treatment, etc.
- To preserve the accident scene for the investigators.
- To enable the investigation to be carried out to prevent recurrences.
- To meet any legal requirements to report incidents.
- To record that an incident has occurred in the event of subsequent civil claims for compensation.

### Investigating incidents:

- To identify the immediate and root causes of the incident – incidents are usually caused by unsafe acts and unsafe conditions in the workplace, but these often arise from underlying, or root causes.
- To identify corrective action to prevent a recurrence – a key motivation behind incident investigations.
- To record the facts of the incident – people do not have perfect memories, and accident investigation records document factual evidence for the future.

- For legal reasons – accident investigations are an implicit legal duty imposed on the employer in addition to any duty to report incidents.
- For claim management – if a claim for compensation is lodged against the employer the insurance company will examine the accident investigation report to help determine liability.
- For staff morale – non-investigation of accidents has a detrimental effect on morale and safety culture because workers will assume that the organisation does not value their safety.
- For disciplinary purposes – though blaming workers for incidents has a negative effect on safety culture, there are occasions when an organisation has to discipline a worker because their behaviour has fallen short of the acceptable standard.
- To enable risk assessments to be updated (an incident suggests a deficiency with the risk assessment, which should be addressed).
- To discover trends.

## TYPES OF INCIDENT

In an earlier element we discussed (with examples) a series of definitions whereby incidents were categorised by their outcome:

- **Near miss** – an unplanned, unwanted event that had the potential to lead to injury, damage or loss but did not, in fact, do so (e.g. a worker narrowly misses being hit by a felled tree that falls the wrong way).
- **Accident** – an unplanned, unwanted event that leads to injury, damage or loss.
- **Injury accident** – where the unplanned, unwanted event leads to some sort of personal injury (e.g. a cut hand).
- **Damage-only accident** – where the unplanned, unwanted event leads to equipment or property damage but not personal injury (e.g. a wall is demolished).
- **Dangerous occurrence** – a specified event that has to be reported to the relevant authority by statute law (e.g. a major gas leak).

- **Ill-health** – a disease or medical condition that is directly attributable to work (e.g. dermatitis as a result of exposure to skin irritants).

Inevitably, when the topic is workplace incident investigation, we think of the investigation of accidents that have led to serious injury outcomes, such as fatality or major injury, but remember that all of these other types of incident may also need to be reported, recorded and investigated.

## BASIC INVESTIGATION PROCEDURES

When investigating an accident or other types of incident there are some basic principles and procedures that can be used:

- Step 1: Gather factual information about the event.
- Step 2: Analyse that information and draw conclusions about the immediate and root causes.
- Step 3: Identify suitable control measures.
- Step 4: Plan the remedial actions.



# Investigating Incidents

However, before the investigation can begin there are two important issues that should be considered:

- Safety of the scene – is the area safe to approach? Is immediate action needed to eliminate danger even before casualties are approached?
- Casualty care – any injured people will require first-aid treatment and may need hospitalisation. This is, of course, a priority. It is also worth considering the welfare of uninjured bystanders who may be in shock.

Once immediate danger has been eliminated and casualties have been attended to a decision may have to be made about the type or level of investigation. Is this to be:

- A relatively simple investigation of an incident that caused no, or only minor outcomes and did not have the potential to cause serious outcomes?
- A more in-depth and thorough investigation of an incident with serious outcomes or potential for serious outcomes?

The first type of investigation might be carried out by the line manager of the area; the second type often involves a team of investigators that might include a safety specialist, senior managers, a technical specialist and perhaps worker representatives.

It may be useful for an organisation to develop a checklist to guide the investigator through the process and act as a memory aide.

## Step 1: Gathering Information

- Secure the scene as soon as possible to prevent it being altered.
- Collect witnesses' details quickly, before they start to move away. In some cases it may help to remove witnesses from the scene and ask them to wait in a separate area. If there are many witnesses it may be better to separate them from each other to prevent them from conferring with each other and developing an 'agreed' story.
- Collect factual information from the scene and record it. This might be done by means of:
  - Photographs.
  - Sketches.
  - Measurements.
  - Videos.
  - Written descriptions of factors such as wind speed, temperature, etc.
  - Taking physical evidence.
  - Marking up existing site/location plans.

The investigator should come prepared with the appropriate equipment to record this information.



Accident investigator taking measurements.

- Once the scene has been thoroughly examined, move on to the second source of information: witnesses. Witnesses often provide crucial evidence about what occurred before, during and after incidents. They should be interviewed carefully to make sure that good-quality evidence is gathered.

## TOPIC FOCUS

Good witness interview technique requires that the interviewer should:

- Hold the interview in a quiet room or area free from distractions and interruptions.
- Introduce themselves and try to establish rapport with the witness using appropriate verbal and body language.
- Explain the purpose of the interview (perhaps emphasising that the interview is not about blaming people).
- Use open questions, such as those beginning with What?, Why?, Where?, When?, Who?, How?, etc. that do not put words into the witnesses' mouths and do not allow them to answer with a "yes" or "no".
- Keep an open mind.
- Take notes so that the facts being discussed are not forgotten.
- Ask the witness to write and sign a statement to create a record of their testimony.
- Thank the witness for their help.



- Once witnesses have been interviewed, move on to the third source of information: documentation. Various documents may be examined during an accident investigation, such as:
  - Site plans, area layout plans.
  - Company policies.
  - Risk assessments.
  - Training records.
  - Safe systems of work.
  - Permits-to-work.
  - Maintenance records.

## Step 2: Analysing Information

The purpose here is to draw conclusions about the immediate and root causes of the incident.

**Immediate causes** are the obvious causes that gave rise to the event itself. These will be the things that occurred at the time and place of the accident. For example, a worker slips on a patch of oil spilt on the floor, injuring his back as he falls backwards and hits the ground. The immediate cause of the back injury is hitting the ground, but there are many contributors to this cause. It is common to think of these in terms of unsafe acts and unsafe conditions. So here, for example, we might have the slippery oil (unsafe condition), and the worker walking through it (unsafe act).

**Underlying or root causes** are the things that lie behind the immediate causes. Often, root causes will be failures in the management system, such as:

- Failure to adequately supervise workers.
- Failure to provide appropriate PPE.
- Failure to provide adequate training.
- Lack of maintenance.
- Inadequate checking or inspections.
- Failure to carry out proper risk assessments.

For example, with the slip we described above, the root causes might be a poorly maintained machine that has leaked oil onto the floor, and a poorly inspected and maintained workshop with broken light fittings and inadequate lighting levels. Here, the worker might be blameless on the basis that, given those conditions, the accident was bound to happen eventually.

Many of the accidents that happen in workplaces have one immediate cause and one underlying or root cause. If that one root cause is identified and dealt with, then the accident should not happen again. For example, if a worker twists their ankle in a pothole in the pavement, then the obvious solution is to fill the pothole in. It might also be worth asking how long the pothole had been there. If it had been there for a long time, why was it not spotted sooner? And if it had been spotted, why had it been left unrepaired with no interim measure being taken to protect people?

These questions might identify an underlying cause, such as inadequate inspection and maintenance, or failure to put interim measures in place while waiting for maintenance work to be carried out.

In contrast to this single cause idea, some workplace accidents are complex and have multiple causes: there are several immediate causes for the accident and each of these has underlying or root causes. For example, a worker might be struck by a load being carried by a forklift truck. Immediate causes for such an accident might be:

- Failure to secure the load on the pallet.
- Poor road positioning of the truck close to a pedestrian exit.
- Aggressive braking by the truck driver.
- An inattentive pedestrian stepping out in front of the truck.

On investigation, each of these immediate causes might have their own separate root causes, such as:

- No training for the driver, who is new to the workplace, has not worked with this type of load before and is unaware of the load-securing technique required.
- Lack of segregation of pedestrian and traffic routes; no barriers and no markings to separate the two.
- Lack of proper driver induction into their new workplace so they are unaware of the layout and position of pedestrian exits, etc.
- Poor maintenance of the truck.
- No refresher training for existing staff, meaning that experienced staff have become complacent.

If there are multiple causes for the accident, then it is important that each of these causes is identified during the investigation - otherwise, incomplete remedial action will be taken and similar accidents may happen in the future.

## Step 3: Identify Suitable Control Measures

Once the immediate and underlying causes of the accident are known, appropriate control measures can be identified. It is important that the correct control measures are established - otherwise, time, money and effort will be wasted on inadequate and unnecessary measures that will not prevent similar occurrences in the future.

Control measures must be identified to remedy both the immediate and underlying causes. Immediate causes are usually easy to identify - if there is a spill of oil on the floor, clean it up; if the guard is missing from the machine, reattach it.

Underlying causes can be harder to determine because they reflect failure of the management system. However, it is essential that the correct control measures to remedy the failure of the management system are identified because this will help prevent similar accidents occurring in similar circumstance across the entire organisation:

- Clean up the oil leaking out of the vehicle in the distribution depot but fail to deal with the underlying cause (lack of inspection and maintenance)

# Investigating Incidents

and more leaks will occur which, in turn, will lead to more pedestrian slips (and perhaps more alarming vehicle skids).

- Clean up the oil spill, identify the source of the oil and the failure of the management system to identify and fix that problem before the accident, and there is a good chance that most oil leaks will be prevented in the future for all vehicles in the fleet at all locations.
- Perhaps the most important questions to ask when identifying control measures are:
  - If this action is taken, will it prevent this same accident from happening in exactly the same way at this location?
  - If this action is taken, will it prevent other similar types of accident from happening in similar locations in the future?

If the answer to both of these questions is “no”, then you need to identify other control measures.

## Step 4: Plan the Remedial Actions

An accident investigation should lead to corrective action being taken, in just the same way as a workplace inspection will. Remedial actions can be presented in an action plan:

Recommended action	Priority	Time-scale	Responsible person
Introduce induction training for all new drivers	Medium	1 month	Warehouse manager

When the action plan is being prepared appropriate immediate and interim control measures must be given suitable priorities and timescales.

Unsafe conditions must not be allowed to persist in the workplace. Dangerous practices and high-risk activities must be dealt with immediately. This means that immediate action must be taken to remedy these circumstances when they are discovered. Machinery and equipment may have to be taken out of action, certain work activities suspended, and locations evacuated. These responses cannot be left until the investigation has been completed. They will have to be implemented immediately to ensure safety while the investigation is in progress.

There may be interim control measures that can be introduced in the short to medium term to allow work to proceed while longer-term solutions are being worked out. For example, hearing protection might be introduced as a short-term control measure until the maintenance of a piece of machinery that is producing excessive noise has been completed. A perimeter guard might be fitted around an overheating machine that would ordinarily be protected with a fixed enclosed guard while new cooling units are sourced and delivered.

Underlying causes will often demand significant time, money and effort to remedy. It is essential, therefore, that the remedial actions that will have the greatest impact are prioritised and timetabled first. There may be actions that have to be taken (to address a management weakness, or to achieve legal compliance) that will not be as effective in preventing future accidents. These actions should still be taken, but with a lower priority.

## TOPIC FOCUS

The contents of a typical incident investigation report may include:

- Date and time of the incident.
- Location of the incident.
- Details of the injured person/persons involved (name, role, work history).
- Details of injury sustained.
- Description of the activity being carried out at the time.
- Drawings or photographs used to convey information on the scene.
- Immediate and underlying/root causes of the incident.
- Assessment of any breaches of legislation.
- Details of witnesses and witness statements.
- Recommended corrective action, with suggested costs, responsibilities and timescales.
- Estimation of the cost implications for the organisation.

## REVISION QUESTIONS

11. What is the main purpose of an accident investigation?
12. What are the four elements of the investigation process?
13. Identify the categories of staff who might be considered useful members of an internal accident investigation team.
14. List the types of documentation that may need to be consulted during an accident investigation.
15. What are the two categories of immediate cause of accidents/incidents?

(Suggested Answers are at the end.)

# Recording and Reporting Incidents

## KEY INFORMATION

- Arrangements should be made for the internal reporting of all work-related incidents, and workers should be encouraged to report.
- Records of work-related injuries should be kept.
- Data collected from incident reports can be used for statistical analysis to identify patterns and trends in the workplace.
- Incident statistics can be used to communicate safety performance to various groups within the organisation, such as the safety committee, senior management and the workforce.
- Certain types of incident - such as fatalities, major injuries, occupational diseases and some dangerous occurrences - have to be reported to external agencies, .

## RECORDING AND REPORTING REQUIREMENTS

Work-related incidents should be reported internally by workers to management. The system that is put in place by an organisation to allow for this should be described in the **Arrangements** section of the organisation's safety policy.

It is standard practice for workers to report incidents to their immediate line manager verbally, followed by completion of an internal incident report form. There are occasions when this simple verbal reporting procedure is not appropriate, and a more complex reporting procedure then has to be introduced. For example, a lone-working contractor visiting a client's premises may have to report their accident to the client as well as to their immediate line manager.

### Internal Incident Reporting Systems

When establishing an incident reporting policy the organisation should be clear about the type of incident that has to be reported by workers. It is usual to include a list of definitions in the policy so that workers understand the phrases used. If the organisation wants workers to report near misses it must specify this in the policy and be clear about what that phrase actually means.

Having established an incident reporting policy, the organisation must encourage workers to report all relevant incidents. Unfortunately, there are many reasons why workers do not report incidents.

The organisation should try to remove each of these barriers to ensure that every relevant incident is reported in a timely manner. Most of these barriers can be dealt with by having a well-prepared, clearly-stated policy, adopting user-friendly procedures and paperwork, and training staff in the procedures. An organisation can take disciplinary action against workers who fail to report incidents if they have been given the training and means to do so.

## TOPIC FOCUS

Reasons why workers might not report incidents:

- Unclear organisational policy on reporting incidents.
- No reporting system in place.
- Culture of not reporting incidents (perhaps due to peer pressure).
- Overly complicated reporting procedures.
- Excessive paperwork.
- Takes too much time.
- Blame culture.
- Belief that management does not take reports seriously.
- Concern over the impact on the company or departmental safety statistics (especially if this is linked to an incentive scheme).
- Reluctance to receive first-aid treatment.

If fatal or major injuries, high-cost dangerous occurrences, high-profile incidents or environmental events occur, it will be necessary to notify certain internal personnel immediately. Senior management, human resources, safety and/or environmental management and worker representatives may all have to be notified. Action by these staff may then be required to inform external parties as necessary, e.g. the family of the casualty, external authorities, insurance companies, public relations advisors, etc. These internal and external contact procedures are often documented in the incident reporting section of the safety policy.



# Recording and Reporting Incidents

## Incident Recording

When a work-related incident is reported a record is usually created of that event (in some instances the report is filed in written form, so reporting and recording are one and the same thing).

As a minimum, organisations should keep a record of all work-related accidents that result in personal injury. This is usually dictated by regional statute law and there is often a standard accident record form or book that should be used. This record must then be kept by the organisation; the length of time that it has to be retained is usually also subject to statute law.

### TOPIC FOCUS

Typical contents of an internal accident record:

- Name and address of casualty.
- Date and time of accident.
- Location of accident.
- Details of injury.
- Details of treatment given.
- Description of event causing injury.
- Details of any equipment or substances involved.
- Witnesses' names and contact details.
- Details of person completing the record.
- Signatures.

Organisations often have separate forms for recording accidents (as above) and recording accident investigations. This is to prevent the personal data in the accident record from being included in the investigation report, making it easier to circulate the investigation report without having concerns about any data protection legislation that might apply.

## REPORTING OF EVENTS TO EXTERNAL AGENCIES

Most countries have statute law that requires certain types of event to be reported to relevant government appointed agencies. All countries agree that fatal accidents must be reported; countries do not agree on the detail of the other types of event that must be reported.

Typical reportable events include:

- Accidents resulting in major injury, e.g. an amputation, such as loss of a hand through contact with machine parts.
- Dangerous occurrences, e.g. the failure of an item of lifting equipment, such as the structural failure of a passenger lift during use.
- Occupational diseases, e.g. mesothelioma, a form of cancer of the lining of the lung, as might be contracted by someone exposed to asbestos.

Other types of event often fall into this reporting regime, such as lost-time injuries, where workers are unable to perform their normal duties for a time period. Local statute law usually specifies how these reports are made and the timescales for reporting.

The International Labour Organisation (ILO) has published several international standards on recommended reporting procedures. The principal reference is the **2002 Protocol to the Occupational Safety and Health Convention 1981 (P155)**; this greatly expands on the general reporting standards of Article 4 of the **Occupational Safety and Health Convention 1981 (C155)**. It is supported by **Recommendation 194**, which lists types of diseases that should be reported to national governments.



A typical Accident Report form

## DATA COLLECTION, ANALYSIS AND COMMUNICATION

Once an incident has been reported and a record of that report has been made the record is usually collected by a nominated responsible person, such as a safety assistant. Information can then be extracted from the report and the report filed.

Appropriate data from the report can be entered into a computer database for analysis so that relevant and useful information about trends and patterns can be obtained. This can be done using standard spreadsheet applications or custom-designed software. The exact nature of the analysis will depend on the information that was collected on the incident report records in the first place, and should be able to answer questions such as:

- What is the trend in accident incidence rate over the last five years?
- What are the most common types of accident?
- What are the most common types of injury?
- Between what times of day do most accidents occur?
- Which part of the body is most frequently injured?
- Which department has the highest accident rate?
- What is the accident rate trend for a particular part of the organisation?
- Where do most accidents occur in the workplace?

This information can then be used to target certain areas of performance where problems have been identified. For example, if an increase in the number of hand injuries in a particular department has been highlighted this can be investigated. If there has been an overall decrease in the accident rate over the last five years but that trend has reversed over the last year, research can be carried out into the reasons for this.

The results of statistical analysis of accident data are usually presented in graphic form, using line graphs, bar charts and pie charts. This is because tables of numbers are difficult to analyse and interpret; people find it much easier to interpret and understand the same information in graphic form.

Within an organisation there are certain people who may be interested in this incident data and their interpretation:

- Directors – who have to report on safety performance to shareholders.
- Senior management – responsible for developing policy and allocating resources.
- The health and safety committee – involved in steering the organisational strategy.
- Worker representatives – concerned about protecting the interests of workers.
- Workers themselves.

Different types of report might be prepared for different target audiences. It is customary to post information about accident statistics on notice boards.

## LESSONS LEARNT

One of the most important phases of incident reporting, recording and investigation is the action that is taken as a result. This is often published internally as “lessons learnt”, so that improvements can be made as a result of the incident, and so that the organisation is seen to take such matters seriously. This should be carried out without breaching the confidentiality of the injured person.

### MORE...

<http://www.ilo.org/>

<http://www.hse.gov.uk/riddor/riddor.htm>

## REVISION QUESTIONS

16. Who is responsible initially for reporting accidents and safety-related incidents?
  17. What is the purpose of analysing all information about accidents?
  18. To whom do the results of accident investigations have to be communicated?
- (Suggested Answers are at the end.)



# Review of Health and Safety Performance

## KEY INFORMATION

- Health and safety performance should be reviewed by managers at all levels within the organisation on a routine basis to ensure that management systems are working effectively.
- Reviewing performance relies on data gathered from various sources, such as accident data, inspection reports, absence data, safety tours and audits.
- Safety specialists usually play a key role in collecting this data and reporting on performance.
- Senior management then have a role in evaluating this information so that appropriate priorities and resources can be allocated.
- Reviews enable action to be taken so that health and safety performance is continuously improved.

## PURPOSE OF REGULAR REVIEWS

Reviewing health and safety performance is a key part of any health and safety management system. Reviews should be carried out by managers at all levels within the organisation on a routine basis. Each review is likely to have a different focus and will be conducted at different intervals. For example:

- A full review of safety management might be undertaken at the highest level of the organisation (board of directors/senior management) on an annual basis.
- The management team may meet every quarter to carry out a review to ensure the performance remains on track (clearly, reviewing progress only once a year is not enough!). This information will feed into the annual review.
- A review of departmental performance might be conducted every month, with the information in the departmental reviews been fed into the quarterly management team review.

Points to consider in a review would include:

- Are the standards being achieved (legal or company-imposed standards)? For example, whether employees are wearing PPE or using control measures when required may be identified in safety tours or behavioural observation tours.
- What do the trends (e.g. incident trends, safety tour trends, etc.) indicate?
- How does this information compare to the targets?
- How does our performance compare to that of other businesses (benchmarking)?

Effective monitoring provides information (in the form of a report) not only to the board of directors summarising the health and safety performance of the business but also to the employees – this demonstration of commitment to continual improvement can boost morale and help establish a positive health and safety culture.

For example, an objective for the organisation is set by the board of directors to achieve a 5% reduction in the lost-time accident incidence rate within one year. The board reviews performance at the end of that year. If a 6% reduction has been achieved, then clearly, the organisation is on target (for this objective) and a new objective can be set for the coming year, with the intention of achieving continual improvement.

## TOPIC FOCUS

Reasons why an organisation should review its health and safety performance:

- To identify whether the organisation is on target.
- If not on target, why not?
- What do we have to change so that we continually improve? For example, are there risks that aren't being controlled adequately? What needs to be done about them?
- Because monitoring is an essential part of any management system (as the saying goes: "If you aren't monitoring, you aren't managing!")
- Because reviews are a required part of accreditation to a management system such as OHSAS 18001.

## PERSONNEL INVOLVED IN THE REVIEW PROCESS

It is good practice to make line managers responsible for reporting on health and safety performance for the areas under their control. This ensures that they view health and safety as one of their personal responsibilities, creates ownership, and raises the profile of health and safety. In some cases, line managers are in a position to gather information and data on health and safety performance themselves. In many instances, however, line managers will rely to some degree on the safety specialist (safety officer, manager or co-ordinator) to provide that information. The safety specialist is well placed to collect evidence about performance and will usually be responsible for reporting on safety performance to senior management/directors. In addition, the senior management team should be involved in reviewing the performance of the area under their control, with the annual review of the organisation's performance being carried out by the board/directors.



Routine performance review meeting

## ISSUES TO BE CONSIDERED IN THE REVIEW

Reviewing health and safety performance relies to a great extent on having good-quality, reliable information about current and past performance, which usually depends on data gathering. One of the first steps in the review process is gathering this information and data.

There is a wide range of topics for consideration in the review including:

- **Legal compliance** – the organisation must be aware of any legal compliance issues, and therefore the review should include a report (possibly from the safety advisor) on any outstanding issues. An organisation may also have specific internal requirements, e.g. higher standards imposed from a parent organisation, which should also be considered in this section.
- **Accident and incident data** – clearly, the number and type of injury accidents, property damage accidents, lost-time accidents, reportable events, etc. should be reviewed as a reactive measure of health and safety performance, together with the review of actions arising from the investigations, to ensure that these are closed out.
- **Findings of safety surveys, tours and sampling and workplace or statutory inspections** – may provide evidence of conformance or non-conformance to standards.
- **Absence and sickness data** – information concerning work-related ill-health, from absence monitoring records, or perhaps the occupational health department (if one exists) should be reviewed in order to determine if there are patterns of absence.
- **Quality assurance reports** may also provide a source of information.
- **Audit reports** – findings of internal and external audits should be reviewed, which may present detailed and comprehensive information on the safety management system and its effectiveness.
- **Monitoring data/records/reports** – the findings of monitoring activities should be considered. For example, if a noise-exposure monitoring activity was carried out a summary of the findings should be reviewed.
- **External communications and complaints** – there are various potential external sources of communication, from regulators to people who live near your premises. If complaints or issues are raised these should be considered so that action can be taken, as required.
- **Consultation** – the organisation should be consulting with the workforce on health and safety matters, so a summary of issues raised could be considered. It may be appropriate to highlight major issues rather than the minor details, which should have been addressed at the consultation stage.
- **Objectives met** – the review should consider the organisation's progress against stated health and safety objectives. If the plan states that: "Manual handling training will be rolled out to all employees by the end of July", monitoring progress of this objective in the regular reviews will keep it on track. The annual review should consider which of the objectives were achieved in the year.
- **Actions from previous reviews** – actions will arise at each review, and progress must be monitored to ensure they are closed out.
- **Legal and best-practice developments** – there may be new legal developments that will impact the organisation in the future, and advance warning of this will enable the organisation to develop a plan to achieve compliance in time to meet legal deadlines.

# Review of Health and Safety Performance

## OUTPUTS FROM THE REVIEWS

Various outputs will arise from the review process. Records of the reviews must be maintained (usually as minutes and action lists) and actions closed out. Some organisations will also be required to report annually to shareholders on their health and safety performance through the annual company report.

Finally, the review process should form part of the continual improvement process of the organisation. Strategic targets are set by senior management - these targets are then channelled down through the organisation and reviewed by line management at different levels:

- **Senior management** set strategic targets.
- **Middle management** review performance in the areas under their control and set targets to bring their area in line with the strategic targets.
- **Junior management** review performance and set local targets that will collectively allow the strategic targets to be achieved.

This means health and safety reviews, at all levels, must feed directly into action plans. These plans should identify the actions to be taken by responsible persons by appropriate deadlines. In this way continuous improvement of health and safety performance can be achieved.

## ROLE OF THE BOARD AND SENIOR MANAGERS

The board of directors/senior management have a crucial role to play in reviewing health and safety performance across the entire organisation on a periodic basis, often annually. This review will normally rely on information collected and prepared by the safety specialist. The board/senior team may be required to make a declaration or statement to stakeholders based on this review.

As a result of the review, senior management may reassess the policy statement of intent and update it, if required. Most importantly, they should use the review process as an opportunity to prioritise and allocate resources. What are the new priorities for the organisation in light of the review? What resources need to be provided to allow these priorities to be achieved?

### REVISION QUESTIONS

19. Performance review is concerned with ensuring that incident investigations are properly concluded. True or false?
  20. What is the purpose of reviewing health and safety performance?
- (Suggested Answers are at the end.)

## SUMMARY

This element has considered the measuring, audit and review aspect of health and safety management systems.

In particular it has:

- Differentiated between active monitoring (checking to ensure that standards are met before any untoward event takes place) and reactive monitoring (measuring safety performance by reference to accidents, incidents and ill-health that have already occurred).
- Outlined some active monitoring methods (inspections, sampling, surveys and tours) and explained the factors that must be considered when setting up an inspection system.
- Considered how to write an effective inspection report.
- Defined auditing as the systematic, objective, critical evaluation of an organisation's health and safety management system.
- Outlined the steps of an audit process, considered the types of information that might be used as evidence, and identified the strengths and weaknesses of external and internal auditing.
- Considered the reasons for accident investigation, perhaps the most important of which is to discover the causes so that corrective action can be taken to prevent similar incidents from happening again.
- Categorised incidents in terms of their outcome: near miss, accident (both injury and/or damage), dangerous occurrence and ill-health.
- Described a basic investigation procedure:
  - Gather factual information about the event.
  - Analyse that information to draw conclusions about the immediate and underlying/root causes.
  - Identify suitable control measures.
  - Plan remedial actions.
- Outlined the arrangements that should be made for the internal reporting of all work-related incidents and the records of work-related injuries that should be kept.
- Explained how data collected from incident reports can be used for statistical analysis to identify patterns and trends in the workplace and how this data might be communicated to various groups within the organisation, such as the safety committee, senior management and the workforce.
- Defined the types of incident that have to be reported to external agencies, such as fatalities, major injuries, occupational diseases and dangerous occurrences.
- Outlined the part that health and safety performance review has to play in ensuring continuous improvement.
- Identified the information sources that might be used in reviewing performance and the role that senior management then have in establishing priorities and resources.





## QUESTION

**Identify:**

- (a) **FOUR** active (proactive), and (4)  
(b) **FOUR** reactive (4)  
means by which an organisation can monitor its health and safety performance.

### APPROACHING THE QUESTION

By now you should hopefully be getting quicker at these questions, so try this one in 15 minutes. At this stage it doesn't matter if it takes you longer, but on the day you will need to do each eight-mark question in about eight minutes.

Think now about the steps you would take to answer the question:

1. As always, read the question carefully. This should be a relatively quick question to answer, as you just have to identify active and reactive monitoring techniques.
2. Next, consider the marks available. The question specifically asks for FOUR active and FOUR reactive techniques, so if you provide more than that only the first four will be marked.
3. Now highlight the key words. In this case they might look like this:

**Identify:**

- (a) **FOUR active** (proactive), and (4)  
(b) **FOUR reactive** (4)  
means by which an organisation can **monitor** its **health and safety performance**.

4. Read the question again to make sure you understand the difference between active and reactive monitoring. (Re-read your notes if you have to.)
5. The next stage is to develop a plan – you are now familiar with how to do this.
6. The answer plan will take the form of a bullet-pointed list that you need to develop into a full answer based on the key words that you have highlighted.

Now have a go at the question. Draw up an answer plan, and then use it as the basis to write out an answer as you would in the exam.

When you have finished, compare your plan and full answer with those that follow.



## SUGGESTED ANSWER

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Plan

Active (Proactive)	Reactive
<ul style="list-style-type: none"><li>• Safety tours.</li><li>• Safety inspections.</li><li>• Audits of management systems.</li><li>• Behavioural observations.</li><li>• Industrial hygiene monitoring, e.g. dust monitoring, noise monitoring.</li><li>• Health surveillance.</li></ul>	<ul style="list-style-type: none"><li>• Accident reporting and accident data.</li><li>• Ill-health/absence reporting/data.</li><li>• Incident reporting, including near misses.</li><li>• Complaints.</li><li>• Prosecutions and enforcement actions.</li><li>• Cost of claims.</li><li>• Property damage reports.</li></ul>

Now have a go at the question yourself.



## POSSIBLE ANSWER BY EXAM CANDIDATE

- (a) *Four active monitoring techniques could be:*
- *Safety tours carried out by managers to monitor safety standards and identify hazards.*
  - *Safety inspections carried out by a safety representative.*
  - *Monitoring of noise levels by a specialist.*
  - *Observation of behaviours to check compliance with procedures.*
- (b) *Four reactive monitoring techniques could be:*
- *Collecting accident and incident data and reports, and analysing trends.*
  - *Analysing absence and sickness data.*
  - *Reviewing complaints from employees.*
  - *Calculating the cost of claims brought due to injuries, and analysing trends.*

### REASONS FOR POOR MARKS ACHIEVED BY CANDIDATES IN EXAM

Some candidates could only provide accident data as a reactive measure when, in reality, there are lots of other examples!

## REVISION AND EXAMINATION

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### THE LAST HURDLE

Now that you have worked your way through the course material, this section will help you prepare for your NEBOSH examination. This guide contains useful advice on how to approach your revision and the exam itself.

# Revision and Examination

## YOUR NEBOSH EXAMINATION

There is a separate NEBOSH exam for each unit of the International General Certificate (Unit ICG1 and Unit GC2). Each exam will consist of one question paper which contains one 20-mark question and ten 8-mark questions. You are allowed two hours in which to complete the exam paper and you should answer all the questions.

To pass each exam you must obtain a minimum of 45% of the total marks available.

If your performance is less than the pass mark then you will be “referred”. This means you may resit the examination provided you do so within **five years** of the original sitting. You may resit as many times as you want within that five-year timescale.

### Be Prepared

It may be some time since you last took an exam.

Remember, success in an exam depends mainly on:

- **Revision** – you have to be able to remember, recall and apply the information contained in your course material; and
- **Exam technique** – you have to be able to understand the questions and write good answers in the time available.

Revision and exam technique are skills that can be learned. We will now look at both of these skills so that you can prepare yourself for the exam. There is a saying that “proper planning and preparation prevents a poor performance”. This was never truer than in an exam.

## REVISION TIPS

### Using the Course Material

You should read through all of the topics at least once before beginning your revision in earnest. This first read-through should be done slowly and carefully.

Having completed this first revision reading of the course materials consider briefly reviewing all of it again to check that you understand all of the elements and the important principles that they contain. At this stage, you are not trying to memorise information but simply checking your understanding of the concepts.

Remember that *understanding* the information and being able to *remember and recall* it are two different things. As you read the course material you should **understand** it; in the exam you have to be able to **remember, recall and apply** it. To do this successfully most people have to go back over the material repeatedly.

Re-read the course material and make notes that summarise important information from each element. You could use index cards and create a portable, quick and easy revision aid.

Pay attention to the **Key Information** and **Topic Focus** boxes in this text, but do be aware that these only summarise some of the important points and focus on particular topics. They do not represent the only information that you need to remember.

Check your basic knowledge content of each element by reading the **Summary**. The Summary should help you recall the ideas contained in the text. If it does not, then you may need to revisit the appropriate sections of the element.



### Using the Syllabus Guide

We recommend that you purchase a copy of the NEBOSH Guide to this course, which contains the syllabus for your exam. If a topic is in the syllabus then it is possible that there will be an examination question on that topic.

Map your level of knowledge and recall against the syllabus guide. Look at the **Content** listed for each element in the syllabus guide. Ask yourself the following question:

*If there is a question in the exam about that topic, could I answer it?*

You can even score your current level of knowledge for each topic in each element of the syllabus guide and then use your scores as an indication of your personal strengths and weaknesses. For example, if you scored yourself 5 out of 5 for a topic in Element 1, then obviously you don't have much work to do on that subject as you approach the exam. But if you scored yourself 2 out of 5 for a topic in Element 3 then you have identified an area of weakness. Having identified your strengths and weaknesses in this way you can use this information to decide on the topic areas that you need to concentrate on as you revise for the exam.

You could also annotate or highlight sections of the text that you think are important.

Another way of using the syllabus guide is as an active revision aid:

- Pick a topic at random from any of the elements.
- Write down as many facts and ideas that you can recall that are relevant to that particular topic.

Go back to your course material and see what you missed, and fill in the missing areas.

### EXAM HINTS

Success in the exam depends on averaging half marks, or more for each question. Marks are awarded for setting down ideas that are relevant to the **question asked** and demonstrating that you understand what you are talking about. If you have studied your course material thoroughly then this should not be a problem.

One common mistake in answering questions is to go into too much detail on specific topics and fail to deal with the wider issues. If you only cover half the relevant issues, you can only achieve half of the available marks. Try to give as wide an answer as you can, without stepping outside the subject matter of the question altogether. Make sure that you cover each issue in appropriate detail in order to demonstrate that you have the relevant knowledge. Giving relevant examples is a good way of doing this.

We mentioned earlier the value of using the syllabus to plan your revision. Another useful way of combining syllabus study with examination practice is to create your own exam questions by adding one of the words you might find at the beginning of an exam question (such as 'explain' or 'identify' or 'outline') in front of the syllabus topic areas. In this way, you can produce a whole range of questions similar to those used in the exam.



# Revision and Examination

## BEFORE THE EXAM

You should:

- Know where the exam is to take place.
- Arrive in good time.
- Bring your examination entry voucher, which includes your candidate number, photographic proof of identity, pens, pencils, ruler, etc. (Remember, these must be in a clear plastic bag or wallet.)
- Bring water to drink and sweets to suck, if you want to.

## DURING THE EXAM

- Read through the whole exam paper before starting work, if that will help settle your nerves. Start with the question of your choice.
- Manage your time. The exam is two hours long. You should attempt to answer all 11 questions in the two hours. To do this you might spend:
  - 25-30 minutes answering Question 1 (worth 20 marks), and then
  - 8-9 minutes on each of the ten remaining 8-mark questions.Check the clock regularly as you write your answers. You should always know exactly where you are, with regard to time.
- As you start each question read the question carefully. Pay particular attention to the wording of the question to make sure you understand what the examiner is looking for. Note the verbs (command words), such as 'describe', 'explain', 'identify', or 'outline' that are used in the question. These indicate the amount of depth and detail required in your answer. As a general guide:
  - 'Explain' and 'describe' mean give an understanding of/a detailed account of something.
  - 'Outline' means give the key features of something.
  - 'Identify' means give a reference to something (could be name or title).
- Pay close attention to the number of marks available for each question, or part of a question – this usually indicates how many key pieces of information the examiner expects to see in your answer.
- Give examples wherever possible, based either on your own personal experience, or things you have read about. An example can be used to illustrate an idea and demonstrate that you understand what you are saying.
- If you start to run out of time, write your answers in bullet-point or checklist style, rather than failing to answer a question at all.
- Keep your handwriting under control; if the examiner cannot read what you have written, then he or she cannot mark it.
- You will not be penalised for poor grammar or spelling, as long as your answers are clear and can be understood. However, you may lose marks if the examiner cannot make sense of the sentence that you have written.

## SUGGESTED ANSWERS

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### NO PEEKING!

Once you have worked your way through the revision questions in this book, use the suggested answers on the following pages to find out where you went wrong (and what you got right), and as a resource to improve your knowledge and question-answering technique.



# Unit IGC1 Element 1: Foundations in Health and Safety

## Question 1

Health and safety has to compete with other management priorities, particularly those associated with the production of goods and services, which is often the main focus of an organisation. It may be seen as an unproductive cost, which conflicts with the requirement to keep costs low.

## Question 2

Moral, economic and social (or legal) reasons.

## Question 3

Insured costs: damage to plant, buildings and equipment; compensation paid to workers; medical costs; legal costs (civil claims).

Uninsured costs: production delays or down time; loss of raw materials; accident investigation time; criminal fines and legal costs; sick pay for injured workers; overtime to make up for lost production; hiring and training new employees; loss of business reputation.

## Question 4

Any three from:

- To provide workplaces and work equipment, and use work methods, which are safe and no risk to health.
- To provide appropriate instructions and training.
- To provide necessary supervision.
- To put in place health and safety arrangements adapted to suit the size and nature of the undertaking.
- To provide any necessary personal protective clothing and equipment free of charge.
- To ensure that the hours of work do not adversely affect employees' safety and health.
- To remove any extreme physical and mental fatigue.
- To stay up-to-date with knowledge in order to comply with the above.

## Question 5

Any two from:

- Take reasonable care of their own safety and that of other people who might be affected by the things that they do and the things that they fail to do.
- Comply with safety instructions and procedures.
- Use all safety equipment properly and not tamper with it.
- Report any situation which they believe could be a hazard and which they cannot themselves correct.
- Report any work-related accident or ill-health.

## Question 6

Enforcement action or prosecution through the criminal courts by the relevant authorities.

Compensation claims from the injured victims, perhaps resulting in action through the civil courts.

# Unit IGC1 Element 2: Health and Safety Management Systems 1 – Policy

## Question 1

There should be a framework of roles and responsibilities for health and safety allocated to individuals throughout the organisation, including the appointment of specialist staff and ensuring that general management roles and arrangements address health and safety issues.

## Question 2

To ensure that the organisational arrangements, health and safety standards and operational systems and measures are working effectively and, where they are not, to provide the information required to revise them.

## Question 3

Because the policy is a reflection of the particular circumstances of each organisation; so any variations in size, nature and organisation of operations, etc. will mean that the health and safety policy will also vary.

## Question 4

The General Statement of Intent, the Organisation (i.e. roles and responsibilities), and the Arrangements.

## Question 5

A senior director, or the Chief Executive Officer, indicating the organisation's commitment at the highest level.

## Question 6

To act responsibly and safely at all times, and to do everything they can to prevent injury to themselves and to fellow workers.

## Question 7

The hierarchy of roles and responsibilities for health and safety, and the lines of accountability between them.

## Question 8

The circumstances that should give rise to reviews, either of general policy or specific aspects of it, include:

- Changes in the structure of the organisation, and/or changes in key personnel.
- A change in buildings, workplace, or worksite.
- When work arrangements change, or new processes are introduced.
- When indicated by a safety audit, or a risk assessment.
- Following government enforcement action, or as the result of the findings from accident investigations.
- Following a change in legislation.
- If consultation with employees or their representatives highlights deficiencies.
- If requested by a third party.

# Unit IGC1 Element 3: Health and Safety Management Systems 2 – Organising

## Question 1

An employer owes a duty to his own employees, other people (both workers and non-workers) who may be in his workplace, other workers who may be carrying out work on his behalf outside of his workplace, and other people who may be outside his workplace but affected by his undertaking.

## Question 2

The two general duties of employees are:

- To take reasonable care of their own health and safety and that of other persons who may be affected by their acts or omissions at work.
- To co-operate with the employer so far as is necessary to enable the employer to fulfil his legal obligations.

## Question 3

It would depend on the terms of the tenancy agreement. Responsibility lies with the person who may be said to control that particular aspect of the premises.

## Question 4

All people involved in the design, manufacture and supply of articles and substances, insofar as it relates to their own role, should:

- Ensure that the articles and substances are safe and without risks to health.
- Carry out any necessary tests.
- Provide end-users with information about the article/substance (this might cover intended use, limitations and inherent hazards, as well as how to use it properly).

## Question 5

In general terms, the client would be responsible for the workplace and environment, and the contractor for the job that they are carrying out. Both parties would be responsible for the health and safety of their own workers, but they would also be responsible for the health and safety of other people who might be affected by their work. So, the contractor would be responsible for the safety of the client's employees if they were carrying out work that might injure the client's employees; and the client might be partly responsible for the safety of members of the public if they might be injured by the work that the contractors were carrying out.

## Question 6

Your definition should cover the main points given in the element:

- Safety culture is the shared attitudes, values, beliefs and behaviours relating to health and safety; or
- Safety culture is the way that all the people within an organisation think and feel about health and safety and how this translates into behaviour.

## Question 7

Through the influence of peer-group pressure. This is the process by which social groups form in the workplace, group behaviour is established, and then social pressure is exerted to force individuals to comply with the group behaviour. There will usually be one or more group leaders who influence the group to a very high degree.

## Question 8

Perceptual distortion occurs when something is not recognised for what it is. The brain does not correctly interpret information. This can arise as a result of illness, inexperience, poor education and training, drugs and alcohol, fatigue, etc.

## Question 9

No. Feedback opportunities may help but are not essential. Most written communication is one way and this does not make that form of communication ineffective; it simply means that the message must be carefully worded to ensure clear understanding.



### Question 10

The following table shows the main merits and limitations of the two forms of communication.

	Merits	Limitations
Written	Permanent record Can be referred back to Can be written carefully, avoiding jargon Widely distributed with ease	Indirect Impersonal Immediate feedback not available Language/literacy issues may exist
Verbal	Personal and direct Immediate feedback Allows exchange of views	Language barriers May not be heard Information may be missed No written record

### Question 11

Mostly, they are incorporated into safety signs.

### Question 12

To set out the general rules to be followed for safe movement around the workplace and what to do in the event of a fire or emergency. These are the priorities. The induction training can then move on to other topics.

### Question 13

There are various times when training should be provided:

- When people first start a job, where specific rules and procedures need to be followed.
- When there are significant changes to work equipment, substances or activities.
- Refresher training.
- After an accident, or near miss.
- When the law or standards change.

### Question 14

The main objective of an emergency procedure is to ensure the safety and health of staff and others who might be affected by the emergency. In some instances minimising other losses associated with the emergency will also be a priority. Preventing an escalation of the emergency may also be important.

### Question 15

Fire or explosion; bomb threat; release or spillage of a hazardous substance.

### Question 16

Hazards in the workplace; general risk level; accident history; number of workers; specific work processes; geographic spread of the workplace; geographic location of the workplace and proximity to the emergency services; vulnerable groups in the workplace; presence of members of the public.

# Unit IGC1 Element 4: Health and Safety Management Systems 3 – Planning

## Question 1

SMART objectives are:

- Specific – a clear, focused objective.
- Measurable – possible to measure that the target has been achieved.
- Achievable – within the timescale set.
- Reasonable – actions the organisation can actually take.
- Time-bound – a completion date for each action.

## Question 2

Hazards will always exist in the workplace and, usually, it is not possible to eliminate them. Risk can be controlled and reduced. This is the central point of health and safety management.

## Question 3

The aim of risk assessment is to eliminate hazards, or reduce risk to an acceptable level. The objectives are to prevent personal injury and ill-health, to achieve legal compliance, and to reduce the costs associated with losses.

## Question 4

Accident triangles show the relationship between numbers of accidents with different outcomes. They show the ratio of number of events with no significant outcome to events with minor outcome to events with very serious outcome. Overall, there will be a much larger number of near misses/incidents compared with the number of minor-injury events, in turn compared with the number of serious-injury events.

## Question 5

Inspection, job/task analysis, analysis of incident data, examination of legislative requirements and associated guidance, examination of manufacturers' information.

## Question 6

Identify the hazards, decide who might be harmed and how, evaluate the risks and decide on precautions, record the findings and implement them, and review the assessment and update, if necessary.

## Question 7

Maintenance staff, cleaners, young workers, lone workers, new and expectant mothers, and disabled staff.

## Question 8

The likelihood of harm occurring and the severity of that harm.

## Question 9

Residual risk is the level of risk remaining after the application of safety precautions. It should be only low-level, acceptable risk.

## Question 10

Factors that might trigger the review of a risk assessment include: changes in legislation; a significant change in work practices and processes; installation of new machinery and equipment; new information becoming available on the hazards/risks; recurring accidents or patterns of ill-health; enforcement action; results of monitoring/auditing; or employment of a category of personnel (e.g. disabled) not previously taken into account.

## Question 11

The missing principles are:

- Combating risks at source, rather than taking measures to control the risk in the wider workplace.
- Giving priority to collective protective measures over individual protective measures.
- Give appropriate instructions to workers.

## Question 12

- (i) Mandatory action – must put litter in bins.
- (ii) Prohibition – not drinking water.
- (iii) Safe condition – drinking water.
- (iv) Warning – radiation hazard.

## Question 13

When it has not been possible to eliminate the hazard or reduce risk to acceptable levels by the use of engineering controls, working methods or administrative controls. PPE is a last resort.

#### Question 14

Internal data sources include: accident records; medical records; absence records; risk assessments; maintenance reports; joint inspections with safety representatives; audits, surveys, sampling and tours; safety committee meeting minutes.

External data sources include: national legislation (e.g. regulations); safety data sheets from manufacturers and suppliers; enforcing authority publications such as Codes of Practice and Guidance Notes; manufacturers' /suppliers' maintenance manuals; national/international standards (BS, BS-EN and ISO standards); information from local safety groups; information from trade associations; information from journals and magazines.

#### Question 15

A safe system of work is a formal procedure that results from a systematic examination of the tasks of a work process in order to identify all the hazards and define methods of working that eliminate those hazards, or minimise the risks associated with them.

#### Question 16

Involvement enables employees to gain a deeper understanding of hazards and risks, and of the way in which safe systems of work will minimise those risks. It also encourages ownership of key controls by the employees involved in their development.

#### Question 17

**Technical or engineering controls** are those that are applied directly to the hazard itself in order to minimise the risk. **Procedural controls** define the way in which work should be carried out in relation to the hazard. **Behavioural controls** define how the individual operator, or groups of workers must act in relation to the hazard.

#### Question 18

Because only people who have been given appropriate training and instruction should be allowed to undertake the work. Supervision is necessary to ensure that staff follow their instructions and training.

#### Question 19

Permits-to-work are formal documents specifying the work to be done, hazards, and the precautions to be taken. Work can only start when safe procedures have been defined and put into place. The permit provides a clear written record, signed by a responsible manager or supervisor, that all foreseeable hazards have been considered and all the necessary actions have been taken. It should usually be in the possession of the person in charge of the operation before work can begin.

#### Question 20

Issue; receipt; clearance/return to service; cancellation.

# Unit IGC1 Element 5: Health and Safety Management Systems 4 – Measuring, Audit and Review

## Question 1

Reactive monitoring is where accidents and other incidents are investigated to find out what went wrong and identify action to prevent recurrence. It also involves the use of accident statistics to identify trends and patterns in accident history. Active monitoring is where existing conditions are inspected to identify and correct sub-standard matters before any sort of incident occurs.

## Question 2

Systematic monitoring involves the planned, regular examination of standards in the workplace as a matter of routine.

## Question 3

The information for reactive monitoring comes from accident and incident reports, accident and incident investigations, issues raised by employees and failings identified by external agencies (e.g. insurance companies or enforcement authorities).

## Question 4

The purpose of workplace inspections is to ensure that the control measures are operating effectively and that they are appropriate to current conditions in the workplace.

## Question 5

Safety inspections are routine examinations of workplace conditions carried out by a competent person(s) (e.g. the weekly inspection of a workshop by the workshop supervisor). Safety tours are high-profile inspections carried out by a team of people, including managers.

## Question 6

Senior management has responsibility for ensuring that effective workplace inspection regimes are in place and are operated effectively. This will include receiving reports and overseeing/agreeing action. In addition, the visible involvement of senior managers in inspections is to be encouraged for the commitment it demonstrates towards safety and the effect on the promotion of a positive health and safety culture.

## Question 7

Checklists help ensure a consistent, systematic and comprehensive approach to checking all the safety elements to be covered during an inspection.

## Question 8

The introductory part of an inspection report should set the scene, outlining what the report is about, why it has been written (the aim), when and where the inspection took place, and who carried it out.

## Question 9

Health and safety auditing is the structured process of collecting independent information on the efficiency, effectiveness and reliability of the total health and safety management system and drawing up plans for any corrective action necessary.

## Question 10

Differences Between Audits and Workplace Inspections	
Audit	Workplace Inspection
Has the aim of assessing the health and safety management system of an organisation.	Has the aim of assessing the use and effectiveness of control measures.
A long process involving the examination of the entire management system.	A relatively short process looking at practices in part of the workplace.
Based primarily on review of documentary evidence, backed up by some observations and interviews of personnel at all levels.	Primarily based on observations, perhaps involving limited scrutiny of paperwork and interview of operators.
Long, comprehensive report that records areas of concern and weaknesses in the management system.	Short report identifying key corrective actions required.
Detailed planning required; requires considerable resources.	Only limited planning; and main resource required is the inspectors' time.
Typically done annually.	Usually done on a weekly, monthly, or quarterly basis.
Aims to improve systems at a high level, with ultimate effect of cascading down to operating level. Is a strategic tool, addressing long-term progress.	Focuses on activities and equipment at operational level, though remedial actions may address system faults.

## Question 11

The main purpose of an accident investigation is to find the cause, with the intention of preventing a recurrence.

## Question 12

Gather factual information about the event; analyse that information and draw conclusions about the immediate and root causes; identify suitable control measures; plan the remedial actions.

## Question 13

The categories of staff might include the immediate line manager (of the injured person, or of the area where the accident took place), a member of management, a safety representative, a safety officer, an engineer, or technical expert, if relevant.

## Question 14

The types of records to be consulted might be:

- Inspection and maintenance records.
- Risk assessments.
- Safe systems of work, or permits-to-work.
- Environmental measurements.
- Medical records.
- General and specific safety reports and analyses that relate to the circumstances.
- Training and other personnel records.
- Minutes of safety committee meetings.

## Question 15

Unsafe acts and unsafe conditions.

## Question 16

The injured party or employees involved in the first instance, followed by the line manager or supervisor.

## Question 17

To identify underlying causes of accidents and to provide information about trends and patterns in workplace accidents.

## Question 18

The result of an individual accident investigation should be communicated to the person involved, his/her immediate manager and the relevant safety representative. Depending on the seriousness of the accident and the extent of the underlying causes, it may also be necessary to inform other managers in the organisation, including senior management, and the safety committee. For reportable accidents, the results might also be notified to the relevant agency.

## Question 19

True, but it is concerned with more than just this one aspect of reactive monitoring. It encompasses the review of all forms of health and safety performance and, where there are deficiencies, taking corrective action.

## Question 20

The purpose of reviewing health and safety performance is to ensure that the aims and objectives of the organisation with regard to health and safety are being achieved.



